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Energy Procedia 16 (2012) 353 – 358

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2012 International Conference on Future Energy, Environment, and Materials

# The Research Review of Land-Use and Land-Management Problems in the Joint of Urban and Rural Area for the Last Two Decades

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## Abstract

The urbanization level of china will exceed fifty percent in 2011. At the present stage, the urban-rural dual structure is more and more prominent. Due to the urban-rural dual management ,many problems were found in the joint of urban and rural in the process of urbanization. This article summarizes the related achievements of land-use and management of Chinese joint of urban and rural for the last two decades. It introduces case-study in three aspects of cognitive, methodology and space planning, and discourses the achievements of different land-use types in the points of construction land, non-construction land.At the same time, this article elaborates the researches in land-management and points out the current excellent processes and the main problems.Finally, this article proposes the anticipation and prospect of study in the future.

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*Keywords:* the urban-rural dual structure; the joint of urban and rural; land-use; land-management;

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## 1. Introduction

Urbanization has stepped into a period of rapid growth in 1996 after its 47 years' initial stage. In 2000, China's urbanization rate increased to 36.2% with 460 million urban populations. The urbanization rate has reached 47.5% by 2010 with the urban population of about 630 million. Rapid urbanization causes sub-health and unchanging state of urban-rural dual structure. Strict barriers such as urban and

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rural household registration, one-fold land circulation system, failure of Market mechanisms widen the gap between urban and rural development. As the mutual penetration area between the core area of cities and suburbs and the most intense areas of urbanization, city outskirts are the natural mapping of urban expansion on agricultural land. The joint of urban and rural is characteristic of dual properties, namely naturalness of the suburbs and the transition. Therefore, the research of land use and management in the joint of urban and rural has gradually been recognized by the academic community as one of breakthroughs in eliminating disadvantages of the urban-rural dual structure. This paper will divide research into land management and land use in the outskirts. By constructing three layers framework, I hope that the conclusions will be of reference use to study of land in the joint of urban and rural.

## **2. Development of the Land Use Research in the joint of urban and rural**

In eighties, the Research of Land Use has been embarked. Though technology and practice are the weak points in specific city case studies due to technical constraints, Dong Liming and other scholars have made great achievements in land utilization rate in respects of its content, theory, methods and measures. In Nineties, suburban land-use studies have become more mature. On the one hand, the research of outskirts of the different areas became more extensive; on the other hand, different types of land use studies progressed. The nineties can be regarded as a watershed in land studies on city outskirts.

### *2.1. Specific studies on outskirts land use*

Based on a large number of specific urban researches, study on the land use of Suburbs has formed a set of land use case base with practical guidance significances. I focus on three categories--- "cognitive theory" research, "methodology" research and "Space and Planning" study. These involved industrial development and land market, methods of geographical arrangement techniques, overall plan of land utilization, sustainability, spatial structure and index system construction.

#### **2.1.1 The "cognitive" theory research - analysis of mechanism and problems**

Before the nineties, Industrial mechanism analysis of land use on city outskirts gave priority to the qualitative and universal research. However, land market studies have failed to link effectively with industrial structure. In nineties, Chen Youqi<sup>[6]</sup>, Chen Caihong<sup>[7]</sup> held that the relationship between land market and land property rights constitute the root of land use problems in the joint of rural and urban; other scholars<sup>[8]</sup> proposed that the property rights discrimination of land market is the main conflict in the land use which results in the illegal land transfer and the formation of hidden land market. Zhou Pu<sup>[9]</sup> took Beijing Fengtai District as an example and established an efficient evaluation index system to estimate the rate of land use. They arrived at a conclusion that Fengtai district paid attention to external expansion rather than internal development by using analytic hierarchy process. By linear regression they found that the secondary and tertiary industries effectively promotes long-lasting marginal output of land.

Domestic study of the sustainability of land use unites traditional economic theory Western with Chinese land conditions so that remarkable results have been achieved. Combining land tax theory from Western classical economics and the Marxism with China's land market, Wang lin<sup>[10]</sup> elaborated driving Mechanism of formation from an economic perspective and analyzed the complexity of using the land.

#### **2.1.2 "Methodology" research - the use of strategy and technology**

As for the delimitation of the scope, academic community has never discontinued the practice of the regional identification analysis work which is based on remote sensing and geographic information system. The introduction of new technologies and innovative research methods make blurry limits clear. With the use of Landsat7 satellite remote sensing data, ArcGIS and ERDA, Lu Haiying<sup>[12]</sup> extract the range of outskirts of Wuxi city and make amendments to it.

Lin jian<sup>[13]</sup> had new methods. They set the basic unit to be administrative village or neighborhood committee. Based on the non-agricultural construction density and land ownership, they designated outskirts area by applying threshold value method and the space superposition method. Afterwards, an area of 518.8 km<sup>2</sup> made up of 206 administrative villages is designated as Beijing city outskirts. Choi Dong<sup>[14]</sup> improved the traditional land use information entropy model by using information entropy theory combined with characteristics of the suburbs land use. They generally designate Nanjing urban fringe areas with the entropy value of 60 and 68 by employing mutation detection method.

### **2.1.3 "Space and planning" research - spatial structure and land use planning**

Spatial form of land-use concentrates on the qualitative analysis in the early period<sup>[15]</sup>. Data side degree analysis of satellite images is dominant while the comparison between multi-city studies has been launched. Zhou Dongmei<sup>[16]</sup> thinks that ecological security assessment index system and quantitative evaluation methods should be set up to found the pattern of ecological security of regional land resources. Taking Nanjing, Suzhou, Wuxi as an example, Cui gonghao<sup>[17]</sup> analyzes the structure of land use and discusses development and change of land use form and spatial structure in the marginal zone.

Some scholars are committed to the exploration recently. Wang Yahua<sup>[18]</sup> takes Gangzha District Nantong as a case and emphasizes the complex structure on the land use area and increasing land fragmentation. She considers that a new round shall break the tradition. Zhou Xueqin<sup>[19]</sup> choose county-level outskirts of metropolis--Bishan County of Chongqing City as the object of study. They point out that intensive and multi-functional agriculture is the dominant type of agriculture and attention should be paid to construction of satellite towns and land support for local industrial development.

## *2.2. Studies on different types of urban outskirts land*

The studies on various types of land use of Suburbs have also made outstanding achievements. Classification research by dividing the construction land and of non-construction land has become common. Meanwhile, the research of land type is particularly prosperous in the non-construction land. Researches that focus on different types reflect their respective characteristics in the process of land use.

### **2.2.1 The study of non-construction land - compromise and protection**

Non-construction land in the transition of urban land into rural land is possessed of the characteristics of resistance. Most domestic scholars regard this as the starting point and explore compromise solutions.

Based on non-construction land planning and status of the Xixin Town, Yang Zhang Yin<sup>[20]</sup> analyzes several models of non-building land-use planning and proposes three kinds of control methods--policy guidance, classification regulation and constraints on construction land expansion. Mei Yun<sup>[21]</sup> explores the rational ways of expansion of non-construction land with Liuzhou as an example. Using Markov and optimization theory, he holds that agricultural land and arable land conversion and land use intensification should be under severe control, land reclamation and land consolidation should be strengthened.

### **2.2.2 Construction Land Study - consolidation and development**

Nearly two decades of reversible rapid urbanization leads to complex challenges of construction land of city outskirts. Against this background, the domestic scholars fall to revealing the law of structure and expansion of construction land from the multi-dimensional aspect. They try to balance multiple interest groups by land consolidation in order to achieve barrier-free development.

Studies on the construction land of suburbs focus on mechanism and consolidation of construction land. Taking Liuzhou as an example, Hu Jing<sup>[23]</sup> uses model of texture expansion of construction land and points out the factors that affect the expansion of land--policy and planning, population and level of urbanization, economic development level. Through the DSR model she simulates three factors with the expansion. Wang Aimin<sup>[24]</sup> advocates that there are three party game relations in land consolidation. He points out that the essence is to reach Cooperation Agreement in the symbiotic region of the interests.

### **3. research on urban fringe land management**

Domestic studies of outskirts land management started rather late. Research achievements focus on the macro-level land management issues and strategies, land management optimization, government land management functions and so on.

#### *3.1. Problems and Solutions of Land Management*

Many scholars dedicate themselves to the macro-level analysis of land management. Gu Yanhui<sup>[25]</sup> considers that the main problems: poor management of land resources, unclear land ownership, inefficient land utilization and hidden markets of the collective land. She proposes a set of optimization suggestions including the exploration of paid use system of homesteads and active guide of the orderly transfer of collective land. Cao Tianyou<sup>[26]</sup> focuses on land storage management and severe pollution and proposes that the interface between the land-use planning and urban planning should be strengthened.

#### *3.2. Optimization of land management*

As for the confusion in land management, Li Min<sup>[27]</sup> takes Beijing Fengtai District as an example, land transfer should be based on the collective organizational units and achieves a reasonable flow of rural land step by step to achieve effective security convergence in urban-rural dual society; Qiao Rongfeng<sup>[28]</sup> analyses how spatial characteristics of mountain plots and uncertainty of land transfer income influence decision-making rural-urban land in Hongshan District Wuhan City. He believes that Government should emphasize innovation of mechanism of rural-urban land decision-making revenue and risk-taking when making circulation decisions. Lei Cheng<sup>[29]</sup> Guangzhou Pan Yu found that there exists two-track urbanization and serious spatial conflict between urban and rural land. He proposes to prepare a unified framework and builds reasonable land governance with multi parties' participation.

#### *3.3. Governmental functions in land management*

Fang Xiao<sup>[30]</sup> focuses on the government's role in land development. He takes Qinyang township government as an example and points out that rapid development of the rural government has been a hidden danger. Undue prominence of administrative power results in lag of functions, person-households separation and division of administrative regions. Wang sao<sup>[31]</sup> doubts about the current governmental land management pattern and suggests that farmers should participate in land management mainly.

### **4. Urban fringe land use and management of Comments**

#### *4.1. Analysis of Achievements*

##### **4.1.1 Comprehensiveness and Systematization of Objects**

The subject of Land studies is more complex and systematic under the influences of the combined effects as transition zone from urban to rural. The focus turns from the urban studies to multi-body study such as rural area, landscape business, government and farmers; from figurative research of entities to the abstract level involving urbanization, management systems, distribution of rights and interests. Besides the comprehensiveness of study subject, stress has been laid on systematic relationship among objects. Quantitative analysis of internal system relations has become a hot spot in research.

#### 4.1.2 Marketization and socialization of Perspective

Research perspective gradually focuses on analysis of land ownership and the mechanism of land market, which is in line with the trend of current domestic market economy and the building of a country. The land market research conduces to regulate activities of the government and enterprises as the main body of the market and provides a strong reference for China's land reform of property rights.

#### 4.1.3 Measurement and high-end of the tool

Previous studies give priority to the qualitative research due to the limit of means. In the last two decades, the use of new technology makes the research more rational and quantitative including ArcGIS, SOPT satellite imaging technology, RS, GPS, ERDAS Imagine software, ERDAS Imagine software. New geographic mapping tools and software development to bring new prospects for the quantitative study.

#### 4.1.4 Popularity and up-dating of the studies

The current study Keywords are: land use control, urbanization, construction land control, land use planning, urban and rural dual structure, land transfer, etc, which are closely related with the main problems in the current domestic outskirts and centre on the core of suburban land use and management. With time passing by and scholars participating, research results will be more abundant and instructive.

#### 4.1.5 Fruitful achievements and extensive practice

Current studies the land use and management in the outskirts are mostly conducted with specific cities as cases, including Beijing, Shanghai, Liuzhou, Changchun, Lanzhou. Different levels of urban research generate plentiful results. Although the depth of the theory is vulnerable, practice case study library is of greater significance for the development of the city outskirts.

#### 4.2. Main problems of the studies

There are still some problems despite of the outstanding fruits: firstly, more and more scholars from all areas join the research of the land use and management of city outskirts involving law, sociology, geography, planning studies, economic management science. Scholars concentrate on their own studies and lack communication. Results are even contradictory; secondly, there are many high-level articles and few research innovations. Most of the studies remain on the surface with vague and impractical recommendations; thirdly, we make use of research methods and techniques abroad rather than referring to the achievements. We learn few lessons from the management level and the construction is hysteretic.

### 5. Prospects and expectation of the studies

Present stage witnesses ample achievements in such fields as the definition of the contents, case studies and management optimization of city outskirts and certain amount of results of great reference value come into being. Basic research structure and scope have been identified. I believe that new technology will be used more widely and methods of scientific delineation of suburbs will be more mature in future studies. These research fruits based on case studies of the cities can be put into practice soon. With the accelerated pace of urbanization, it is more worthwhile to study city outskirts, which provides more research opportunities and topic for the numerous young scholars in the future. Insistence on interdisciplinary and practice-based research method is a prime way to achieve breakthrough results.

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