Research on the Construction of Index System for the Influence of New Urbanization on Land Intensive Use

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Abstract: Shaanxi province accounts for a quite significant status in the strategy for the development of the northwest, which as a bellwether in northwestern five provinces. Therefore, the development of Shaanxi province is of great significance in the development of the national. The new-type urbanization is inevitable different from the former, which as the formulation of national strategy and implementation. The problem of intensive land-use is widely concerned in the progress of new-type urbanization of Shaanxi province. Therefore, this paper uses scientific methods to establish an index system for new urbanization and land intensive use.

1. Introduction

In recent years, China’s urbanization process has developed rapidly, and the scale of cities has been expanding, which has made urban land use tense, leading to the irrational use of land resources. Based on this, the 18th National Congress of the Communist Party of China regards new urbanization as a national development strategy, improves the status of urban land use and improves the intensive use of land with a new urbanization development approach. Therefore, this study constructs an index system for the factors affecting urbanization and discusses the impact of new urbanization on land intensive use.

2. Land use situation in Shaanxi Province

The land use areas in Shaanxi Province are significantly different [1]. The characteristics of land use in northern Shaanxi are: the proportion of agriculture, forestry and animal husbandry is basically 1/3 [2]. Although the land use structure is relatively reasonable, the Loess Plateau is sparsely populated, with sparse vegetation and less forest land resources. Excessive reclamation, overgrazing, and excessive mining of farmland and woodland have caused great waste of land resources. Up to now, more than 10% of the land has not been developed and used by humans. The land utilization rate in the Guanzhong area is the first in the three regions of Shaanxi Province. It is a structural mantle plain. The large-scale land resources are distributed in plain areas with flat ground, low terrain and good water supply conditions. The Guanzhong area is known as the 800-year-old Qinhuai. The large area of land is used for various production sites, accounting for about four-fifths of the total area of the Guanzhong Plain. The cultivated land is vast, accounting for about two-thirds of the production land area. One; nearly one-fifth of the land is used for residential sites, industrial and mining sites, and various transportation facilities. Overall, the area of unutilized land in Guanzhong is relatively small and mostly distributed in mountainous areas with relatively high altitudes and inconvenient transportation. The total area of these areas accounts for less than 5%. The southern Shaanxi area is located in the Daba mountainous
area of the Qinling Mountains. The mountainous hills are widely distributed. The cultivated land area only accounts for about 10% of the total area of southern Shaanxi. The population distribution is relatively small, mainly distributed in mountainous areas, while the urban population density is relatively low, of which the city The land area of various public infrastructure accounts for only 2% of the total area. The southern part of Shaanxi has a humid climate. The Han River, the largest tributary of the Yangtze River, passes through the Han River. It is rich in water resources and suitable for the growth of various vegetations. Therefore, the coverage of vegetation is high, and forest land, garden land and grassland are widely distributed. About 70% of the total area in southern Shaanxi. At the same time, because the landform type is mainly hilly and the surface is rugged, there are some slopes that are not suitable for farming and vegetation growth.

3. Definition of new urbanization and land intensive use concepts

The concept of new urbanization: New urbanization means adhering to the people-oriented, taking the new industrialization as the driving force, taking the overall consideration as the principle, promoting urban modernization, urban clustering, urban ecologicalization, rural urbanization, and comprehensively improving the quality and level of urbanization. Take the path of scientific development, intensive and efficient, functionally perfect, environmentally friendly, socially harmonious, distinctive personality, urban and rural integration, large and medium-sized cities and small towns coordinated development of urbanization [3].

The evaluation of macro-earth intensive use is based on the connotation of land use, and establishes the evaluation index system of land intensive use from the three aspects of land use intensity, land use intensity and land use benefit, and evaluates the current land use rate and development. Potential, through the comparative analysis of land use status, reveals the differences in land use efficiency in Shaanxi Province, and proposes to improve the degree of land intensive use in Shaanxi Province [4].

4. Indicator system construction

4.1 Evaluation Index of New Urbanization in Shaanxi Province

Combined with the concept of new urbanization, the process of urbanization is accompanied by the concentration of population to the city, the transformation of rural landscapes, the improvement of various urban systems and the adjustment of industrial structure; and it follows systematic, scientific, operability, real-time and Principles such as the availability of data [5], from the three aspects of population urbanization, economic urbanization, and spatial urbanization, form an index system that includes seven indicators of new urbanization.

| classification             | Evaluation index/unit                                               | Information entropy | Information utility value | Weights |
|----------------------------|---------------------------------------------------------------------|---------------------|--------------------------|---------|
| Population urbanization     | Non-agricultural population / 10,000 people                          | 0.98018             | 0.1982                   | 0.09203 |
|                            | Built-up area / km²                                                  | 0.97327             | 0.02673                  | 0.12414 |
|                            | Built-up area population density / person / km²                     | 0.98193             | 0.01807                  | 0.08394 |
| Spatial urbanization        | Per capita public green area / person/m²                            | 0.98278             | 0.01722                  | 0.07998 |
|                            | Green coverage rate in built-up area /%                             | 0.98163             | 0.01837                  | 0.0853  |
|                            | Per capita industrial output / yuan                                 | 0.98232             | 0.01768                  | 0.08212 |
|                            | The output value of the secondary and tertiary industries accounted for the proportion of GDP /% | 0.98292             | 0.01708                  | 0.07931 |

From the three dimensions of population, economy and space, we will construct a new urbanization evaluation system (Table 1), and use spss software analysis. From the perspective of population, new
urbanization will inevitably lead to changes in the size of urban space. This paper uses the proportion of urban built-up area and non-agricultural population and the population density of built-up areas. Therefore, this paper considers the use of non-agricultural population and the area of the built-up area and the population density of the built-up area are represented by three indicators. From the perspective of economic connotation, the new urbanization performance is as follows: First, the average per capita share of industrial products produced by industrial enterprises during the reporting period, this article uses per capita industrial output value; second, the new industrialization as the driving force to achieve Industrial transformation and upgrading is the key link to promote the transformation of urbanization. Therefore, this paper selects the industrialization level and the output value of the secondary and tertiary industries as a percentage of GDP. From the perspective of space activities, the per capita public green area and the green coverage rate of the built-up area are the performance of new urbanization, so these two data can be used to represent the indicators of new urbanization.

4.2 Evaluation Index of Land Intensive Use in Shaanxi Province

To construct an indicator system for intensive use of land, in terms of index selection, the data of Shaanxi Province's land input intensity[^6], land use intensity[^7] and land use benefit[^8] from 2010 to 2014 were used to Shaanxi Province. The intensive use of land was evaluated to construct the land intensive use index system of Shaanxi Province.

| Classification       | Evaluation index/unit            | Information entropy | Information utility | Weight |
|----------------------|----------------------------------|---------------------|---------------------|--------|
| Land input intensity | Average urban fixed assets investment Ten thousand yuan/m2 | 0.98045             | 0.01955             | 0.1461 |
|                      | Real estate development investment Ten thousand yuan/m2 | 0.97732             | 0.02268             | 0.16952|
|                      | (average) industrial output value/Billion | 0.98452             | 0.01548             | 0.11573|
|                      | (average) added value of the tertiary industry/Billion | 0.9849              | 0.0151              | 0.11287|
| Land use benefit     | Urban per capita road area/Square meter | 0.97755             | 0.02245             | 0.1678 |
|                      | Green coverage rate in urban built-up areas/% | 0.97603             | 0.02397             | 0.17912|
| Land use intensity   | Urban per capita construction land/Km2 | 0.98543             | 0.01457             | 0.10888|

It can be seen from Table 2 that from 2010 to 2014, the average urban fixed asset investment and real estate development investment in Shaanxi Province can reflect the change of land input intensity, so these two data are used to indicate the index of land input intensity. The average industrial output value, the increase in the third-level output value of the land, the per capita road area of the town, and the green coverage rate of the urban built-up area can reflect the trend of land use benefit from the side. Therefore, the four data are used to represent the land use benefit. Relevant indicators: the change of urban per capita construction land can reflect the change of land use intensity. Therefore, the data of urban per capita construction land is used to indicate the land use intensity.

5. Conclusions and deficiencies

The construction of the indicator system lies in the accurate grasp of its connotation. This study follows the principles of systemic, scientific, and real-time, and divides the new urbanization into three categories: population urbanization, economic urbanization, and spatial urbanization. Seven indicators for the new urbanization index system; from the three dimensions of land input intensity, land use intensity and land use benefit, including seven evaluation indicators to build an indicator system for land intensive use.
Taking Shaanxi Province as a sample, the entropy method was used to measure the correlation between new urbanization and land intensive use in Shaanxi Province. The research results show that the confidence of each evaluation index is significantly correlated, which confirms the rationality and scientificity of the evaluation index system.

In the process of constructing the indicator system, after arranging the opinions and opinions of relevant experts, the research carried out repeated revisions to the evaluation index system, striving to achieve perfection of the evaluation index system, but due to the limited level and the difficulty of obtaining certain indicator data. The design of the indicator system may still need to be improved, and further research is needed in the future. The evaluation system constructed in this study can provide reference for future government decision-making.

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