Evaluation of Intensive Land Use in Shuikoushan Economic Development Zone, Hunan Province, China

W He, F M Kuang and P Wang

College of City and Tourism, Hengyang Normal University, Hengyang Hunan 421002, China

Email: wangpengnju@163.com

Abstract: Taking Shuikoushan Economic Development Zone as the research objective, the degree of intensive land use was evaluated, by means of multi-factor assessment method. The results showed that the degree of intensive land use of Shuikoushan Economic Development Zone reached 84.89%. The land use status was good and the management performance of land use was superior while the land use efficiency was inferior on the contrary. Then, suggestions and measures for the future land intensive use were provided.

Keywords: Economic Development Zone, Intensive Land Use, Shuikoushan, Hunan Province

1 Introduction

Since been set up in 1984, development zone had been playing an active role in promote region and city economic development[1]. But there still had problems in land use in development area, such as extensive utilization and idleness[2]. Alter the land use of development zone from extension development to intention development. Continuous and normalized evaluation on land intensive use was an important measure to solve the land use problem of development zone for governments at all levels [3]. Evaluating the degree of land intensive use of development zone scientifically and rationally, its significance to supervise land use and realize sustainable development of development zone, and could be the scientific basis for the extension and upgrade of development zone[4]

Taking Shuikoushan Economic Development Zone (SEDZ) as the research object, setting December 31, 2013 as evaluation point, the degree of intensive land use was evaluated. Then made a thorough analysis on the evaluation results, in order to reveal the experience and problems in the land use of Economic Development Zone, and to provide basis for land management policy making and land intensive use mechanism constructing.

2 General situations of study area and data sources
SEDZ, located in the north side the Changning city, south of the Xiang river, founded in June 1992. It was a provincial development zone approved by The People’s Government of Hunan Province in March, 1994, reserved as provincial development zone by National Development and Reform Commission in September, 2006.

According to Rules for the evaluation of land intensive use in development zones 2014 (trial implementation) (hereinafter referred to as Regulation) and Development zone direction area demarcation implementation program promulgated by Ministry of land and Resources of People’s Republic of China, one development direction area was delimited on the eastern side of SEDZ in 2014. The research area included the development direction area.

The total area of SEDZ was 647.12 hm² (primary area 218.06 hm²; development direction area 429.06 hm²). In 2014, the proportion of completed urban construction land was 53.22%, uncompleted urban construction land 46.78%, and no Non-construction land.

The basic data was provided by Administrative Committee of Shuikoushan Economic Development Zone, Changning Land and Resources Bureau, Changning Urban and Rural Planning Bureau, and field investigation.

3 Land intensive use evaluation

3.1 Evaluation Index System

According to Regulation, combined with actual situation of SEDZ, the evaluation type of SEDZ was industry-oriented. The evaluation index system comprised three main components: land use status, land use efficiency and management performance; contain three levels, which were objective, sub-objective, and index. There were three objectives, five sub-objectives, ten indexes (nine indexes for development direction area) (Table 1).

3.2 Evaluation index weights and ideal values

In reference to unified index weights and ideal values in Hunan Province in 2014, and combined with SEDZ’s actual condition, the weights and ideal value were decided by the target method (Table 1).

3.3 Calculation of intensive land use values

Evaluation was done by multi-factor comprehensive evaluation method. For unified dimension, the evaluation indexes were standardized by ideal value ratio method. According to the index weight of evaluation results, we should calculate the comprehensive score of SEDZ land intensive utilization by weighted sum. Score ranged from 0 to 100%, if the score was high, the level of land intensive use was high, and potential of the land intensive use was small.

3.4 Result analysis

The intensive land use score of SEDZ was 84.89%(Table 1), basically achieved the requirement of land intensive use, but there was a certain gap between the intensive degree score and the ideal value, and the SEDZ’s land resources potential should be further tapped.

3.4.1 Land use status
SEDZ was at a higher degree of land use. In primary area, the standardized value of land supply rate was 98.92%, and the standardized value of land completion rate achieved ideal value (100%). In development direction area, the standardized value of land development rate was 97.2%.

In status of land use structure, the industrial land rate of SEDZ was high. The standardized values of industrial land rate of both primary area and development direction area were more than 96%, even the standardized values of industrial land rate of development direction area exceeded the ideal value of the unification of Human Province.

The land use intensity scores of both primary area and development direction area were not very high, for primary area was 85.87%, for development direction area was 65.55%. Only the building density of primary area exceeded the ideal value of the unification of Human Province, other indexes still had a certain difference compared with ideal.

3.4.2 Land use efficiency should be improved

Land use efficiency of SEDZ should be improved. In primary area the land use efficiency score was only 47.31%, in development direction area the score was 79.5%. There was a big gap between the land use efficiency indexes and the ideal values.

3.4.3 Management performance was well, no idle land

Through investigating, up to the evaluation point, there was no idle land in SEDZ. Management performance attained the ideal value.

4 Conclusions

The score of intensive land use score of SEDZ was 84.89%, indicated a significant intensive land use level of SEDZ. The intensive degree of the primary area (85.54%) was higher than the development direction area (82.29%). In SEDZ, land use was in good condition, management performance was good, and there was no idle land, but the efficiency of the land should be improved.

Acknowledgements

This research was financially supported by Science Foundation of Hengyang Normal University (No.13B51) and Hengyang Social Science Foundation (No.2016D101).

References:
[1] Guo K L, 2016. A Research on Evaluation and Optimization of Land Intensive Use in Development Zones ——A Case Study of Gedian Economic and Technology Development Zones. Journal of Taiyuan Normal University (Natural Science Edition), 15(1):59-65.
[2] Jia K, Chang, Y., 2016. The Evaluation of Land Intensive Use in Economic Development Zones of Shandong Province. Journal of Anhui Agricultural Sciences, 44(1):285-288.
[3] Zhang X P, Lu D D, 2002. Land Use in the Development Areas and Its Interactive Relationship with Regional Development. Resources Science, 24(5):32-38.
[4] Zhang X T, Ding J Q, Lei X, 2015. Evaluation Research on Intensive Use of Development Zone Land Under Background of "New Normal". Journal of Northwest A&F University(Social Science Edition), 16(2):35-42.
| Evaluation scope | Weights | Objective | Weights | Sub-objective | Weights | Index | Weights | Present value | Ideal value | Standardized value | Sub-objective score | Objective score | Evaluation range score | Comprehensive score |
|------------------|---------|-----------|---------|--------------|---------|-------|---------|-------------|-------------|-----------------|-----------------|----------------|---------------------|-------------------|
| Primary area     | 0.8     | land use status | 0.75    | Degree of land development | 0.2    | Land supply rate | 0.4    | 98.92      | 100          | 98.92          | 99.57          | 91.26            | 85.54              | 84.89              |
|                  |         |           |         | Land completion rate | 0.6    | 100              | 100    | 100        |              |                |                |                  |                    |                    |
|                  |         |           |         | Rate of industrial land | 1      | 57.88            | 60     | 96.47      |              |                |                |                  |                    |                    |
|                  |         |           |         | Comprehensive volume ratio | 0.25   | 0.74             | 1      | 74         | 85.87       |              |                |                  |                    |                    |
|                  |         |           |         | Building density | 0.15   | 68.83            | 68.83  | 100        |              |                |                |                  |                    |                    |
|                  |         |           |         | Comprehensive volume ratio of industrial land | 0.28   | 0.76             | 0.9    | 84.44      |              |                |                |                  |                    |                    |
|                  |         |           |         | Industrial land building density | 0.32   | 49.38            | 55     | 89.78      |              |                |                |                  |                    |                    |
|                  |         |          | land use efficiency | 0.15 | Land input and output efficiency of output | 1 | Intensity of investment in fixed assets of industrial land Tax per industrial land | 0.5 | 163.593 | 3000 | 54.53 | 47.31 | 47.31 | 47.31 | 47.31 | 47.31 |
|                  |         |           |         | Rate of idle land | 1      | 0                | 0      | 100        | 100          |              |                |                  |                    |                    |
|                  |         |           |         | Degree of land development | 0.2    | 92.34            | 95     | 97.2       | 97.2         | 80.49         | 82.29          |                  |                    |                    |
|                  |         |           |         | Land development rate | 1      | 62.22            | 62.22  | 100        | 100          |              |                |                  |                    |                    |
|                  |         |           |         | Status of land use structure | 0.25   | 30.23            | 55     | 54.96      |              |                |                |                  |                    |                    |
|                  |         |           |         | Status of land use structure | 0.25   | 30.23            | 55     | 54.96      |              |                |                |                  |                    |                    |
|                  |         |           |         | Rate of industrial land | 1      | 2559.85          | 3000   | 79.5       | 79.5         |              |                |                  |                    |                    |
|                  |         |           |         | Intensity of investment in fixed assets of industrial land Tax per industrial land | 0.5   | 294.66           | 400    | 73.66      |              |                |                |                  |                    |                    |
|                  |         |           |         | Comprehensive volume ratio of industrial land | 0.28   | 0.61             | 0.9    | 67.78      |              |                |                |                  |                    |                    |
|                  |         |           |         | Coefficient of building occupation of industrial land | 0.32   | 30.23            | 55     | 54.96      |              |                |                |                  |                    |                    |
|                  |         |           |         | Rate of idle land | 1      | 0                | 0      | 100        | 100          |              |                |                  |                    |                    |