

Implementation Performance Evaluation on Land Use Planning: A Case of Chengdu, China

HE Ge^{[a],*}; ZHANG Ning^[a]

^[a] College of Economics and Management, Sichuan Agricultural University, Chengdu 611130, China.

* Corresponding author.

Received 15 May 2012; accepted 28 July 2012

Abstract

This paper aims at evaluating implementation performance of land use planning of Chengdu city from economy, efficiency, effectiveness and equity perspectives. The results shows that that over the period of 1997-2006, the land use planning of Chengdu city achieves a better implementation performance in economy, efficiency and effectiveness fields but in the equity fields is not so good. Then the paper proposes some policy recommendations to improve the land use planning.

Key words: Land use planning; Implementation performance evaluation; Chengdu city

HE Ge, ZHANG Ning (2012). Implementation Performance Evaluation on Land Use Planning: A Case of Chengdu, China. *Cross-Cultural Communication*, 8(4), 34-38. Available from <http://www.cscanada.net/index.php/ccc/article/view/j.ccc.1923670020120804.1020>
DOI: <http://dx.doi.org/10.3968/j.ccc.1923670020120804.1020>.

INTRODUCTION

There is a growing concern about implementation performance evaluation on land use planning (LUP) in the context of urban sprawl, sharp decline arable land area and environment degradation. China has many people with few land resources; and per capita arable land area decreased to 0.093 hm², less than the world average of 40%, of which high-quality arable land only 1/3 of the total in 2006. LUP has an important role in allocating land resources among different uses but it always fails in controlling the arable land decrease, which give rise

to the argument about evaluating the implementation performance of the LUP in China. Baer (1999) proposed impact assessment approach to assess the LUP implementation performance based on its consequences and implications so that to make a revision of the planning according to the reality of policy changes. David Harvey (2001) evaluated planning implementation results based on full understanding of legitimacy, fairness and social issues. Ge He *et al.* (2010) established coordination degree model which integrated land use efficiency, ecological service value and compact growth to evaluate the result of the LUP control urban sprawl. Alexander (1989) believed that the performance evaluation of planning implementation could provide a scientific basis for decision-making. Talen (1996) thought that the successful planning implementation conformed the planning intention. Lucie Laurian (2004) established the performance evaluation index system based on the breadth and depth of planning implementation; Calbick (2004) established 24 indicators combined questionnaire surveys and interviews to sort the degree of indicators success. Xia *et al.* (2006) designed a set of evaluation index system of land use planning based on implementation policies, land use and effectiveness of implementation.

Objectively speaking, there have been many studies on implementation performance evaluation on the LUP. However, few literatures study it from economy, efficiency, effectiveness and equity ("4E") aspects although it has been widely used in governmental performance evaluation. In this context, this paper aims at evaluating on implementation performance of the LUP of Chengdu city from "4E" perspective. This paper unfolds as follows: the next section reviews the literature related to this study, the third section is methodology introducing the evaluation method and data used in this study, the fourth section is results and the last section concludes.

1. EVALUATION FRAMEWORK OF LUP IMPLEMENTATION PERFORMANCE BASED ON 4E

In the 1980s, in a new program of reform of financial management, the United Kingdom efficiency group took the lead in the establishment of “3E” Assessment Programme: Economy, Efficiency and Effectiveness. View of “3E” performance evaluation excessive pursuit of economic efficiency and ignore the concept of social value, such as equality, public, fair. In 1997, Flynn added Equity to the “3E”, so that become the “4E” performance evaluation criteria. These sustainable development indicators more directly reflect the long-term interests of

the Government affairs provide favorable conditions for the establishment of the market as the main economic development environment. Specifically, the economic indicators consider the “cost” and “input”; efficiency indicators should consider “input” and “output”; effectiveness indicators consider the “output” and “results”; equity indicators consider “results” and “fair”. Ultimately through the “4E” to examine and weigh the level of performance of the evaluation object. To sum up, as far as “4E” be concerned, the economy means the government spend less cost while benefit more; the efficiency is government behavior is efficient or not; effectiveness is the government action whether bring good results; equity is to maintain social justice and equality. (Figure 1).

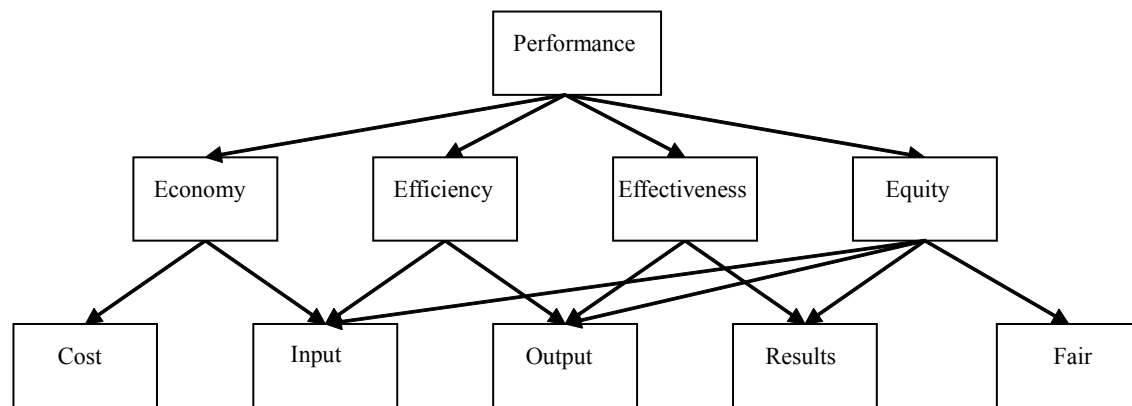


Figure 1
“4E” Performance Evaluation Framework

“4E” concept presents a new perspective for performance evaluation index system; also provide a useful reference for establishing implementation performance evaluation framework on LUP. In terms of “4E”, evaluation on the implementation performance of LUP could be established the evaluation framework from the following four aspects: (1) Economy: when it came to economy for land use, obviously it means that the economical development or economical activity should use less land especially arable land to obtain more produce. This claims the land user use the stock land and tried their best to realize intensive use for their land. In context of many people with few arable land of China, this also claims that few arable land acquisition when develop economy. Thirdly it means over the period of LUP implementation, land productivity should be maintain in terms of food security and fast economical develop, accelerating urbanization give rise to great demand of land; (2) Efficiency: as a foundational factor, land is essential for any economical activity. And land use efficiency means rational ratio relationships between land resource inputs and economical outputs during the LUP

implementation. In other words, land use efficiency means to achieve the maximum economical, social and ecological benefit with minimum land occupation; (3) Effectiveness: effectiveness means to what extent the LUP’s goal is achieved. For example, the LUP is made a goal that during the LUP implementation, the city should maintain some arable lands. When the goal is achieved, which means the LUP has good effectiveness or performance in this field. The main effectiveness indicators are the control indexes in the LUP and economic, social, and ecological benefits which brought about the LUP; (4) Equity: for evaluation on implementation performance of the LUP, Equity has two aspects meanings: Firstly, the fairness of planning implementation process, including public participation mechanisms whether are universally binding, administrative mechanisms whether are open and transparent, regulatory mechanism of interest whether is fair; Secondly, the fairness of residents to share equity in a variety of public resources and services, or whether the public can be fair to share the benefits of urban construction and development. Specific evaluation index system is shown in Table 1.

Table 1
Evaluation Indicators of Land Use General Planning Implementation Performance

Destination layer	Criterion layer	Sub-criteria layer	Measures layer
Performance evaluation on land use planning	Economy	Land economic input of planning implementation	the number of agricultural workers in unit of agricultural land
			Investment in fixed asset per capita
	Efficiency	Land output of planning implementation	Unit of construction land real estate development and investment
			Grain yield
			Unit of agricultural land agricultural added value
			The secondary and tertiary industrial added value per unit of urban construction land
	Effectiveness	The implementation of control Indexes of planning	Urban construction land area
			Cultivated land used for construction area
			Amount of cultivated land
			Basic farmland protection area
The area of Land development and consolidation to supplement the cultivated land			
Total retail sales of social consumer goods			
Equity	Economic	The fairness of the planning decision-making process	Agricultural output value
			The output value of secondary and tertiary industries
	Society	The distribution of planning benefits or services in the social group	Public satisfaction
			Per capita in urban residential area
	Ecology		Rural per capita living space
			The transformation area of Low-yield farmland
			Rate of soil erosion governance
			Effective irrigation rate of cultivated land
			Public participation
			Per capita land for public facilities
			Per capita public green space

2. RESULTS AND DISCUSSION

Chengdu city, is the capital of Sichuan province, which located in the western part of China. Chengdu city is a key city known as its beautiful scenery, history and location. Recent decades, Chengdu city has gained noteworthy achievement in soc-economical developments. The data from Chengdu municipal Bureau of Statistics shows that over the period of 1978-2010, the GNP increased from 3.54 billion yuan to 555.1 billion yuan, increased by 36.7 times. At the same time, the urbanization rate increased from 22.26% to 47.94% (Figure 2). Land is a foundational factor for economical activity, to some extent, the abovementioned soc-economical achievements is at the cost of excessive arable land acquisition, environmental degradation and ecological damages. With the continuous development of economic, the relationship between land and people of Chengdu is increasingly strained: large population with relatively little land, high demand for construction land, sharp conflict between land supply and demand. The implementation of the LUP of Chengdu (1997-2006) also had the phenomenon of the tension of the planning target. Additionally, Chengdu city, experienced and historical land reform and achieved great performance. So, this study chosen Chengdu city as an example for evaluating on implementation performance of LUP.

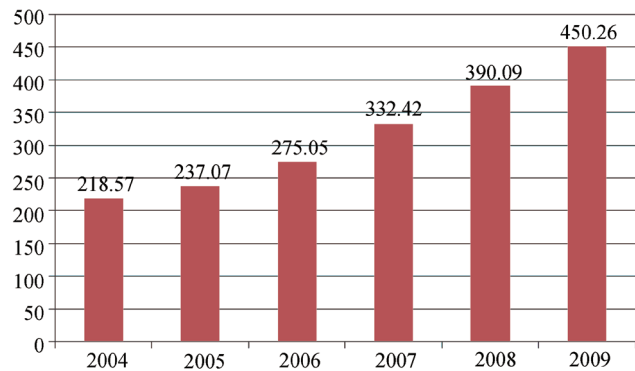


Figure 2
Chengdu City's GDP over the Period of 2004-2009

According to the results of multi-level fuzzy comprehensive evaluation, the result implementation performance of the LUP of Chengdu city is 0.2140 (Table 2). The result shows that is that the evaluation results of the land use general planning (1997-2006) of Chengdu is “good”. The planning targets got implementation and obtained a better economic, social and ecological benefit, achieved the harmony and unity of scientific of the planning, efficiency of implementation management and progressive of social development. But the evaluation results are not “excellent”, and land use planning is not a straight-line development trend, the implementation

quality of all aspects of indicators are influenced by policy-driven. So this paper takes “4E” evaluation result as a starting point, focusing on analysis of the

achievements and shortcomings of the last round planning in aspects of economy, efficiency, effectiveness and equality.

Table 2
Fuzzy Comprehensive Evaluation Results of Land Use General Planning Implementation Performance of Chengdu

Criterion layer	Sub-criteria layer	Excellent	Good	Medium	Poor	Maximum	Result
Economy	Land economic input of planning implementation	0.0077	0.0626	0.0000	0.0000	0.0626	Good
Efficiency	Land output of planning implementation	0.0818	0.0139	0.0129	0.0030	0.0818	Excellent
	The implementation of control Indexes of planning	0.0712	0.2606	0.0243	0.0206	0.2606	Good
Effectiveness	Economic	0.0484	0.1126	0.0282	0.0062	0.1126	Good
	Society	0.0494	0.0505	0.0213	0.0000	0.0671	Good
	Ecology	0.0364	0.0117	0.0000	0.0000	0.0364	Excellent
	Effectiveness	0.0382	0.1353	0.0147	0.0090	0.1353	Good
	The fairness of the planning decision-making process	0.0052	0.0116	0.0127	0.0035	0.0127	Medium
Equity	The distribution of planning benefits or services in the social group	0.0080	0.0149	0.0154	0.0057	0.0154	Medium
	Equity	0.0005	0.0010	0.0011	0.0004	0.0011	Medium
	Performance evaluation on land use planning	0.0834	0.2140	0.0266	0.0149	0.2140	Good

2.1 The Evaluation Results Analysis of Economy Indicators

The evaluation result of economy indicator is “good”, and it showed during the last round planning the land development of Chengdu preliminary achieved the effective control of the amount of funds, labor and other inputs for land use. It effectively curbed the resource consumption in economic growth and production process. Among them, the number of agricultural workers in unit of agricultural land and unit of construction land real estate development and investment controlled within the target limits, it reflects the efficient use of Chengdu city in land development and utilization of resources. In accelerating the process of “resource-saving and environment-friendly society”, strive to achieve efficient use of existing resources input through revenue and cutting expenditure, resources and market co-ordination. The evaluation results of economy indicators is the inevitable result, also promote the policies and measures to some extent.

2.2 The Evaluation Results Analysis of Efficiency Indicators

The evaluation result of efficiency indicator is “excellent”. Grain yield, unit of agricultural land agricultural added value and the secondary and tertiary industrial added value per unit of urban construction land approached or reached the pre-requirements. The grain yield completed 87.23% of the expected results of the planning, unit of agricultural land agricultural added value increased nearly 45% than the pre-planning, only the secondary and tertiary industrial added value per unit of urban construction land had a little gap with planning object. This is mainly due

to lack of general planning in some projects of planning implementation, resulting in land layout dispersion sites scattered layout, failed to form the effect of scale aggregation. According to statistics, in 2006, the land per unit output GDP reached 222,000 Yuan/hm², of which the industrial productivity was 885,500 Yuan/hm² and agricultural productivity was 34,200 Yuan/hm². This indicates that in the last round of land use general planning the Chengdu city realized high efficiency of land use, got the double effect of the construction land per unit area output increases and agricultural land yields smooth volatility.

2.3 The Evaluation Results Analysis of Effectiveness Indicators

The evaluation result of effectiveness indicator is “good”, which the implementation of control Indexes of planning also is “good”. The evaluation result of amount of cultivated land, basic farmland protection area and area of land development and consolidation to supplement the cultivated land are ideal, but urban construction land area and cultivated land used for construction area are Clearly beyond the scope of control, mainly because of residential land in ultra-scale, Urban construction land in ultra-scale, towns land ultra-scale. The evaluation results of the economic and social indicators are “good”, ecology indicator is “excellent”. From 1997 to 2006, the total GDP of Chengdu annual average growth is 15%, industrial output value increased by 30.3% on average, are higher than the 1978-1996 average growth of 11.4% and 17.2%. For each additional mu of non-agricultural construction land, the new additional total GDP is 443,000 Yuan,

which added 185,400 Yuan of industrial added value, higher than the provincial average. Public satisfaction of planning remains need to be further improved, per capita living conditions had gradually improved after the implementation of the plan: Per capita in urban residential area was only 17 m²/person in 1996, rural living area is 22.50 m²/person, from 2004 to 2006, growth is relatively slow, there is a gap from the planning objectives. At the same time, the implementation of last round planning improved agricultural ecological environment, soil erosion control rate reached 82.30%, the effective irrigation of cultivated land increased from 88.7% to 98.57%.

2.4 The Evaluation Results Analysis of Equality Indicators

Fuzzy Comprehensive Evaluation results show that the equality of the evaluation at the level of “medium”, the implementation performance needs to be improved. The evaluation result of public participation is medium, only had 63% of public participation. It shows the last round land use planning of Chengdu is still a planning of government-led, experts and scholars take participation. Poor awareness of social services, imperfect system supply and error of planning roles make the interest groups of planning have been set outside the planning process. The existing public participation is a mere formality, not really involved. The evaluation result of per capita public green space is “good”, per capita land for public facilities is “medium”. The primary and basic principles of modern land use general planning is equitable ownership of land resources. During the implementation of last round planning, there is a lot of for profit purpose of urban land development of super strength in Chengdu: Land development projects diverted the land for municipal facilities, land for public cultural facilities and public green space, some developers improves building volume rate for land development. The market mechanisms with characteristics of personal interests threat the overall interests of public and the city.

CONCLUSION

The result shows that the implementation performance of last round land use general planning of Chengdu of is good. It got better result in the three aspects of economy, efficiency and effectiveness. The result reflects the implementation of last round planning not only

achieve the effective development and utilization of land resources in a certain extent, but also properly deal with the relationship between land use and socio-economic development and environmental protection, promote the coordinated development of the economic and social of Chengdu, resulting in a better social, economic and ecological environmental benefits. However, the equality of the planning implementation performance needs to be improved. Rationality based on equity, equality resides in rationality, and to show the reasonableness of the fair, the two are both unity and opposite. Therefore, in order to truly achieve fair occupancy of public space resources, only to pursuit the unity of rationality and fairness in the regional space. However, how to better integrate equality into the performance evaluation of land use planning and use the mathematical model to give a reasonable evaluation, there are a lot of work needs to be done at this stage. Looking forward there is more land use planners concern on this issue.

REFERENCES

- Alexander, E.R., & Faludi, A. (1989). Planning and Plan Implementation: Notes on Evaluation Criteria Environment and Planning. *Planning and Design*, 16, 127-140.
- Baer, W.C. (1999). *General Plan Evaluation Criteria*. New York: America Planning Association Press.
- Calbick, K.S., Day, J.C., & Gunton, T.I. (2004). Land Use Planning Implementation: A Best Practices Assessment. *Environments*, (3), 69-82.
- HE, Ge, WANG, Z., *et al.* (2010). Assessment on the Performance of Land Use General Planning on Controlling Urban Growth in Terms of Synergy Degree. *China Land Science*, 24(9), 64-69.
- Laurian, L., Day, M., Berke, P., *et al.* (2004). Evaluating Plan Implementation: A Conformance-Based Methodology. *Journal of the American Planning Association*, 70(4), 471-480.
- Sawicki, D.S., & Patton, C.V. (2001). *Basic Methods of Policy Analysis and Planning* (Lanzhi Sun, *et al.* Trans.). Peking: Huaxia Press.
- Talen, E. (1996). After the Plans: Methods to Evaluation the Implementation Success of Plans Journal of Planning. *Education and Research*, 16, 79-91.
- XIA, Chunxue, & YAN, Jingming (2006). Indicator System of Implementation Evaluation for Land Use Planning. *China Land Science*, 20(2), 20-23.