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Evaluation of Green Growth Capacity in National New Areas

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Abstract

As a special policy area under China's new normal economic background, the National New District plays a key role in the realization of economic and social development and green growth. This paper constructs an evaluation index system for green growth capacity from five aspects: government support capabilities, corporate green capabilities, NGO supervision and guidance, public participation capabilities, and park output benefits. Various methods are used to measure green growth capacities of these four National New Districts including the Jinpu, Pudong, Binhai, and Nansha. The results show that government support capability has the greatest impact on the green growth capacity of the state-level new district and Pudong has the largest green growth capacity, followed by Binhai, Nansha and Jinpu.

Keywords

Green Growth Capacity, National New Area, China, Evaluation

1. Introduction

At present, China economic development is in the "structural" deceleration which is called "new normal". This is a state of development that pays more attention to the "quality" rather than "quantity" of economic growth. The main characteristics are that "from high speed growth to medium and high speed growth, from factor driven, investment driven to innovation driven". Most scholars believe that the new momentum of economic growth under the new normal should take the development of industry as the first step. The construction of the national new area which emphasize on the green development of industry and the innovation of technology green is the key to the optimization and upgrading of the economic structure and the transformation of the mode of economic growth under the new normal state. At the same time, the central economic work conference held at the end of 2017 made it clear that the prevention and control of pollution is one of the three major battles in the next three years. It shows the determination of Chinese government to chase the green growth path. As a special policy area, the state-level new area is related not only to the economic and social development of a certain region, but also to the overall strategic layout of the economic and social development and the reconstruction of the regional spatial pattern. It is a forceful practice of the call for "upgrading the industrial innovation with the supply side reform" and "pollution prevention and control".

After more than 20 years of exploration and development, China has set up 19 new national new areas and made certain achievements. However, there are still many problems, such as unclear management authority, lack of industrial chain in the new area, lack of innovation interaction with scientific research institutions, and low level of regional recycling and low carbon management (Zhao et al., 2018; Li, 2015). At the same time, in recent years, green growth as a new growth mode which emphasizes the pursuit of economic growth and development, and to prevent the deterioration of the environment, loss of biodiversity and natural resources sustainable utilization has been widely recognized by the international community. Therefore, academia and industry generally believe that in the context of China's actively promoting the transformation of economic growth mode and realizing the green growth of economy, the cultivation of green growth capacity will become the key engine to solve the development dilemma of state-level new district.

At present, with the importance of the national economic development in the national economic development, some scholars have done a certain research on the national new area. But it mainly focuses on location selection (Peng et al., 2015), function orientation evaluation (Ye et al., 2015), management system and power allocation (Li, 2015), new area water resources management (Li et al., 2015) and so on, rarely involving green growth and its capability. For green growth research, at present, more remain in the connotation of green growth, path of formation, influence and other aspects. Few scholars start from the perspective of ability to launch a thematic study of green growth capacity. It can be seen that the national new area research and green growth capacity has not yet formed effective integration. The research on the green growth ability of the national new area is relatively scarce. Few scholars have carried out quantitative evaluation research on the green growth ability of the national new area. Therefore, this research uses the "green development index", "low carbon green index", "green economic development index", "green" and other related research results, considering the unique of national district, and based on the stakeholder theory. Constructing the evaluation index system of green growth ability of national district from the government, NGO, enterprise and the public level. On this basis, this paper uses the combination weighting method including G1 method, G2 method, entropy method and deviation maximization method to make an empirical analysis of the green growth capacity of 19 national new areas.

This study is organized as follows. Section 2 establishes the evaluation index system for green growth capacity of National New Areas. Section 3 proposes the evaluation model for green growth capacity, and an empirical analysis is conducted in Section 4. Finally, Section 5 presents the concluding remarks, limitations of the study, and directions for future research.

2. Evaluation Index System for Green Growth Capacity of National New Areas

Selecting scientific and reasonable evaluation index is the key to construct the evaluation index system of green growth capacity of the national new area. Therefore, this article follows the following principles in the process of index selection, 1) Scientific principle. The index system must be built on the basis of science and based on the actual situation of our country, which can objectively reflect the concrete situation of the green growth of the national level new area. 2) Logic principle. Evaluation indicators need concise, clear and logical language, so as to facilitate the evaluation of experts in evaluating reception and application, maintaining consistency and avoiding ambiguity. 3) Maneuverability principle. The index system needs data obtained from the current national new area administrative committee, and the economic meaning of the selected indicators should be clear, and the representative main indicators and comprehensive indicators should be selected as far as possible. 4) Advancement principle. The selected indexes can reflect the latest development of green growth ability in time, and there is no lag. Freeman (1984) believes that the success of an organization or enterprise depends on how to manage the relationship between key stakeholders [6]. Therefore, the leaders of the organization or enterprise should focus on the needs and well-being of the stakeholders (Ditlev-Simonsen & Wenstøp, 2013), that is, stakeholder theory. At present, stakeholder theory has been widely applied in different fields, such as green supply chain management, eco industrial park sustainable development and corporate social responsibility evaluation. Similarly, the construction of green growth capacity of state-level new area as a complex system engineering will also be influenced by many factors such as government, enterprises, NGO, and the public. Therefore, based on the above principles, this article is based on the stakeholder theory and from the four stakeholders, such as the government, the enterprise, the NGO and the public.

The evaluation index system of green growth ability in the national district includes 4 aspects of government support capability, enterprise ability, NGO green supervision, public participation ability, and 17 secondary indicators, and 44 tertiary indicators (See Table 1).

3. Evaluation Model for Green Growth Capacity of National New Areas

The evaluation model is as follows.

Table 1. Evaluation index system of green growth capacity in National New Area.

Primary indicators	Secondary indicators	Tertiary indicators
Government support capacity (GS)	Financial input (GS1)	Investment in infrastructure construction
		Investment in green technology research and development
		Energy saving and environmental protection input
	Financial subsidy (GS2)	Environmental protection subsidies
		Scientific and technological research and development subsidy
		Energy subsidies
	Perfection of laws and regulations (GS3)	Preferential tax policy
		Punishment policy
		Pollutant discharge standard policy
	Executive power of government supervision (GS4)	Fines
		Warning
		Supervision
	Green propaganda service (GS5)	Publicity activity frequency
		Construction of propaganda service platform
Enterprise green ability (EG)	High level leaders' cultural level and green consciousness (EG1)	The number of graduate students and above
		Green cognition and attention degree
	Staff green knowledge learning ability (EG2)	Mastering the richness of green knowledge
		Learning the speed of green knowledge
	Practice of green management in Enterprises (EG3)	Taking green supply chain management
		Taking clean, environmental production related certification
		Energy saving and emission reduction reconstruction project
	Green technology progress and innovation ability (EG4)	Quantity of green products
		License number of green technology patent
		Investment in green technology research and development
		The number of green technology talents
NGO supervision guidance (NS)	Cooperation with government and enterprises (NS1)	Cooperation frequency
		Scope of cooperation
	Supervision of the implementation of the green activities of the government and enterprises (NS2)	Supervision activity
		Validity of supervisory activities
	Provide guidance, training and financial support for enterprise green management activities (NS3)	Guide training
		Financial support
Public participation capacity (PP)	Consumer's green consumption behavior (PP1)	Consumer demand for green consumption
		Consumers' perception of green value
		Consumers' ability to pay green payment

Continued

	Participation of local residents in green construction in New Area (PP2)	Attention and supervision of green construction in New Area
		The frequency of participating in the environmental protection public welfare activities in the New Area
Park output benefit(PO)	Economic performance (PO1)	Total business income of new area enterprises accounts for the proportion of GDP in the region
		The total amount of tax revenue in the new area accounts for the proportion of the total tax revenue in the region
		Market share of green products in New Area
	Environmental benefit (PO2)	"Near zero" emission of pollutants
		Recycling and reuse of waste
		Unit GDP energy consumption
	Social benefit (PO3)	Employment accounts for the proportion of local workers
		Per capita wage level in the New Area

Source: From the literature review.

The data collection and processing of this study are shown in Figure 1. Firstly, based on the raw data from collection, the data should be standardized to eliminate the effect of index dimension and quantity of data. Secondly, this paper uses G1, G2, entropy method and discrepancy maximization method to calculate index weights. Thirdly, based on the objective function and the principle of maximum entropy, the combined weights will be calculated. Finally, the value of green growth capability for each research object will be calculated.

The data using in this study was obtained through questionnaire. There are two methods for the survey. The first method is with the aid of the personal relationship to investigate, such as telephone interviews, field surveys, and fill out questionnaires on the spot. And this method is applied in the Jinpu New District and Binhai New District.

The second method is to obtain the contact information with the help of the local government authorities, and send electronic questionnaires via email. This method is mainly used in the Pudong New District and Nansha New District.

3.1. Normalization of Raw Data

Setting x_{ij} to represent the normalized value, and v_{ij} represents the value of i object and the j target, and n represents the number of evaluation objects. As the index of this paper is positive, it is normalized according to the forward scoring formula (Li et al., 2004):

$$x_{ij} = \frac{v_{ij} - \min\limits_{1 \le i \le n}\left(v_{ij}\right)}{\max\limits_{1 \le i \le n}\left(v_{ij}\right) - \min\limits_{1 \le i \le n}\left(v_{ij}\right)} \tag{1}$$

3.2. Single Evaluation Method of Empowerment

1) Calculation of weight by G1 method [9]

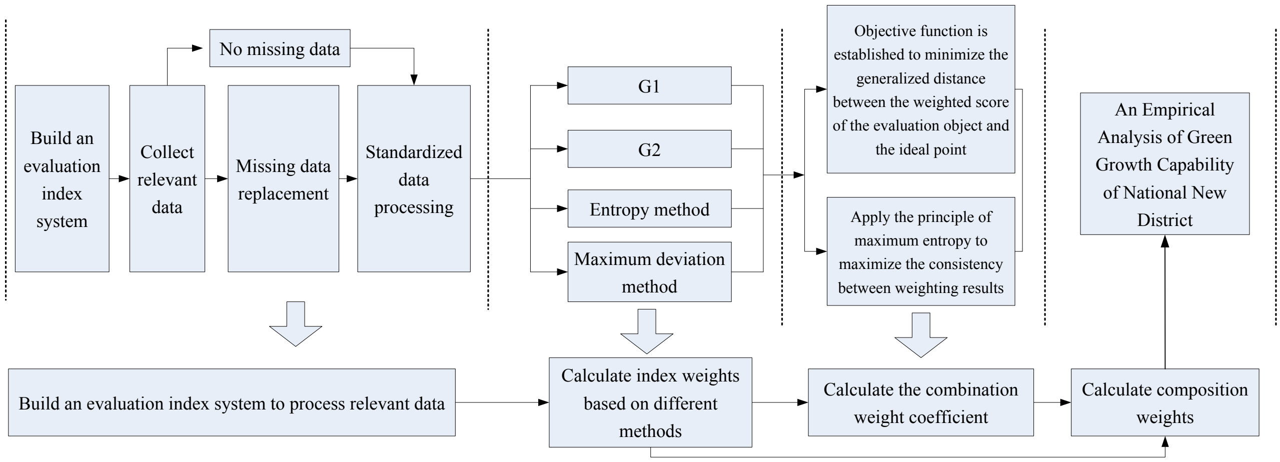

Figure 1. Evaluation model based on combination weighting method. Source: From the literature review.

The G1 method is a subjective evaluation method, which mainly reflects the importance of the index by the subjective sort of the experts.

a) Determining the order relationship of evaluation indicators, that is, the subjective judgment of the importance of each index,

b) Subjectively valuing the importance R_i of adjacent indexes x_i and x_{i-1},

c) Using formula (2), Calculating the weight of the k index.

$$w_k = 1 \Big/ \left(1 + \sum_{i=2}^{k} \prod R_i\right) \tag{2}$$

d) The weight of the weight w_k can be obtained by the weight of the k − 1, …, 2, 3 index, as shown in formula (3). Among them, w_{i-1} represents the weight of the i − 1 index, and R_i represents the subjective assignment given by the expert.

$$w_{i-1} = R_i * w_i \tag{3}$$

2) Calculation of weight by G2 method (Wang et al., 2005)

The G2 method is also a subjective evaluation method, but unlike the G1 method, experts need to identify the most unimportant indicators.

a) Determining the order relationship of evaluation indicators, that is, the subjective judgment of the importance of each index,

b) The experts identify the least important indicator x_k,

c) The experts determine the importance of x_i and x_k and give a subjective assignment,

d) Using formula (4) to calculate the weight of the i indicator. Among them, w_i represents the weight of the i, and D_i represents the subjective assignment given by experts.

$$w_i = D_i \Big/ \sum_{i=1}^{k} D_i \tag{4}$$

3) Determination of weight by entropy method (Guo, 2002)

Entropy method reflects the importance of the index by calculating the difference between the values of the same index. The greater the numerical difference, the more important the index is.

a) Using formula (5), and calculating the weight of r_{ij}. x_{ij} is the original value of the object *i* and the indicator *j*, $i=1,2,\cdots,n$; $j=1,2,\cdots,m$;

$$r_{ij}=x_{ij}\Big/\sum_{i=1}^{n}x_{ij} \tag{5}$$

b) Using formula (6), and calculating the information entropy e_j of the indicator *j*, and $k=1/\ln n$, *n* is the number of indicators;

$$e_j=-k\sum_{i=1}^{n}r_{ij}\ln\left(r_{ij}\right) \tag{6}$$

c) Computing the redundancy of information entropy.

$$d_j=1-e_j \tag{7}$$

d) Setting w_j as the weight of the index *j*, and the calculation formula is as follows,

$$w_j=d_j\Big/\sum_{j=1}^{m}d_j \tag{8}$$

4) Calculation weight of deviation maximization method (Huang et al., 2012)

The maximum deviation method is to calculate the importance of the index by calculating the proportion of the total deviation of the total index *j*, and the greater the proportion, the more important the index is.

a) Setting s_{ij} as the value of the object *i* and the indicator *j* through the normalization. Setting w_j as the weight of indicator *j*. For *j*, using $H_{ij}(w)$ to show the deviation of *i* and other indexes ($k=1,2,\cdots,n$),

$$H_{ij}(w)=\sum_{j=1}^{m}\left|s_{ij}w_j-s_{ik}w_j\right| \tag{9}$$

b) Calculating *j*, the total deviation of all objects from other objects,

$$H_j(w)=\sum_{i=1}^{n}\sum_{k=1}^{n}\left|s_{ij}-s_{ik}\right|w_j \tag{10}$$

c) According to the principle of maximum deviation, the optimizing model is

$$\max H(w)=\sum_{j=1}^{m}\sum_{i=1}^{n}\sum_{k=1}^{n}\left|s_{ij}-s_{ik}\right|w_j$$
$$\text{s.t.}\begin{cases} w_j\geq 0 \\ \sum_{j=1}^{m}w_j^2=1 \end{cases} \tag{11}$$

d) The above model is calculated and normalized, and the weight of the deviation method is obtained.

$$w_j=\frac{\sum_{i=1}^{n}\sum_{k=1}^{n}\left|s_{ij}-s_{ik}\right|}{\sum_{j=1}^{m}\sum_{i=1}^{n}\sum_{k=1}^{n}\left|s_{ij}-s_{ik}\right|} \tag{12}$$

3.3. Calculation of Combination Weight Coefficient

This paper calculates the combination weight coefficient a_c based on the following two factors, $\sum_{c=1}^{s} a_c = 1$ ($s = 1,2,3,4$).

a) To ensure that the weighted scores of each evaluation object and the generalized distance of the ideal point are minimization. l_i is the generalized distance between the weighted scores and the ideal points of each evaluation object. w_{jc} is the weight of the *j* index of the *c* method of empowerment. x_{ij} is a normalized value for the *j* index of *i* object.

$$\min \sum_{i=1}^{n} l_i = \sum_{i=1}^{n}\sum_{j=1}^{m}\sum_{c=1}^{s} a_c w_j^c \left(1 - x_{ij}\right) \tag{13}$$

b) The principle of Jaynes maximum entropy is introduced to reflect the degree of consistency among various empowerment results. Based on the principle of minimum difference of weighting results, the objective function is constructed as formula (14). $\theta\left(0 \le \theta \le 1\right)$ is the equilibrium coefficient between two targets, according to the research of Li Baizhou (Li et al., 2013), $\theta = 0.5$.

$$\begin{aligned} &\min \theta \sum_{i=1}^{n}\sum_{j=1}^{m}\sum_{c=1}^{s} a_c w_j^c \left(1 - x_{ij}\right) + \left(1-\theta\right)\sum_{c=1}^{s} a_c \ln a_c \\ &\text{s.t.} \sum_{c=1}^{s} a_c = 1, x_c \ge 0 \end{aligned} \tag{14}$$

c) Constructing the combination coefficient of Lagrange's function.

$$a_c = \frac{\exp\left\{-\left[1 + \theta \sum_{i=1}^{n}\sum_{j=1}^{m} w_j^c \left(1 - x_{ij}\right) \Big/ \left(1-\theta\right)\right]\right\}}{\sum_{c=1}^{s} \exp\left\{-\left[1 + \theta \sum_{i=1}^{n}\sum_{j=1}^{m} w_j^c \left(1 - x_{ij}\right) \Big/ \left(1-\theta\right)\right]\right\}} \tag{15}$$

3.4. Calculating the Combinatorial Weight

Calculating the weights of each index by G1 method, G2 method, entropy method and maximum deviation method, $w_c\left(c = 1,2,3,4\right)$, and using formula (16) to calculate the combination weight.

$$w = \sum_{c=1}^{s} a_c w_c \tag{16}$$

Multiplying the transfer a of the combination weight w^{T} obtained by formula (16) and the result of standardization of each index to get the evaluation score of green growth ability of each national level new area *S*.
$Q_i\left(i = 1,2,3,\cdots,n\right)$ is the evaluation score of each area.

$$S = W^{\mathrm{T}} \times X = \left(Q_1, Q_2, Q_3, \cdots, Q_n\right) \tag{17}$$

4. Empirical Analysis

This article takes Jinpu New District, Pudong New District, Binhai New District and Nansha New District as the research objects with 2017 as the research time.

The raw data of related indicators were obtained through field visits and research.

The reasons for taking Jinpu New District, Pudong New District, Binhai New District and Nansha New District as the research objects are as follows.

Firstly, these areas are located in coastal cities. The coastal cities are representative, which occupies important positions in the development strategy of national new districts.

Secondly, these four areas have been built before 2015, and their development scale and level were more mature. So the research results are basically stable.

Finally, as the authors maintain close contact with the managers of these four new districts, it can ensure data availability, timely and reliability.

This paper takes the evaluation of green growth capacity as the main line, and focuses on these four new areas' development levels of green growth capacity. Therefore, the internal mechanism of green growth capacity is not the key of this study. In the future research, we will conduct in-depth research on the internal mechanism of green growth capacity.

After obtaining the original data of the relevant indicators, this paper carries out a standardized process for each index to find the formula (1) $x_{ij}\left(i=1,2,3,4; j=1,2,\cdots,44\right)$. The specific calculation process and results are as follows.

4.1. The G1 Method Calculates Weights

1) According to expert opinion, the relative importance of government support capability (GS), corporate green capacity (EG), NGO supervision and guidance (NS), public participation capacity (PP), and the output efficiency of the park (PO) is ranked. PO > GS > PP > NS.

2) Compare the importance of neighboring children's abilities and assign them. Like R_5 = EG/PO = 1.2, R_4 = PO/GS = 1.4, R_3 = GS/PP = 1.1, R_2 = PP/NS = 1.2.

3) Bring the equivalent value into the formula (2) (3) to obtain the government support ability (GS), the corporate green capacity (EG), the NGO supervision and guidance (NS), the public participation capacity (PP), and the park output efficiency (PO) The weight of G1 method. Similarly, through the ratio of the importance of the adjacent indicators of indicator layer, the weight of indicator G1 method can also be obtained, as shown in **Table 2**.

4.2. The G2 Method Calculates Weights

1) Determine the most insignificant sub-capacity factor U5 by an expert.

2) According to expert opinion, the ratio of the importance of the remaining factors to T3 is assigned, like D_1 = U1/U5 = 1.7, D_2 = U2/U5 = 1.5, D_3 = U3/U5 = 1.4, D_4 = U4/U5 = 1.3, D_5 = U5/U5 = 1.

3) Bring Di into Equation (4) to get the G2 weights of the five. Similarly, the ratio of the importance of the adjacent indicators at the indicator level can also be obtained by using the G2 method weights at the indicator level, as shown in **Table 2**.

Table 2. Evaluation Index Weights.

Index	G1	G2	Entropy method	Maximum deviation	Index	G1	G2	Entropy method	Maximum deviation
GS11	0.0163	0.0131	0.0180	0.0216	EG42	0.0203	0.0161	0.0322	0.0226
GS12	0.0198	0.0184	0.0334	0.0222	EG43	0.0290	0.0190	0.0206	0.0240
GS13	0.0180	0.0170	0.0227	0.0231	EG44	0.0223	0.0205	0.0187	0.0229
GS21	0.0128	0.0138	0.0212	0.0220	NS11	0.0209	0.0273	0.0228	0.0239
GS22	0.0128	0.0165	0.0226	0.0216	NS12	0.0209	0.0248	0.0171	0.0219
GS23	0.0116	0.0152	0.0394	0.0251	NS21	0.0230	0.0382	0.0207	0.0228
GS31	0.0121	0.0118	0.0206	0.0233	NS22	0.0230	0.0347	0.0238	0.0222
GS32	0.0157	0.0107	0.0207	0.0228	NS31	0.0190	0.0327	0.0269	0.0219
GS33	0.0173	0.0139	0.0415	0.0239	NS32	0.0190	0.0298	0.0207	0.0228
GS41	0.0136	0.0146	0.0200	0.0210	PP11	0.0251	0.0328	0.0171	0.0219
GS42	0.0124	0.0133	0.0273	0.0232	PP12	0.0276	0.0205	0.0207	0.0228
GS43	0.0150	0.0146	0.0254	0.0223	PP13	0.0228	0.0287	0.0207	0.0228
GS51	0.0169	0.0132	0.0203	0.0232	PP21	0.0378	0.0390	0.0180	0.0222
GS52	0.0169	0.0171	0.0200	0.0213	PP22	0.0378	0.0355	0.0269	0.0219
EG11	0.0254	0.0233	0.0163	0.0220	PO11	0.0249	0.0310	0.0245	0.0234
EG12	0.0330	0.0180	0.0180	0.0222	PO12	0.0273	0.0284	0.0284	0.0241
EG21	0.0244	0.0216	0.0164	0.0205	PO13	0.0226	0.0258	0.0270	0.0228
EG22	0.0244	0.0238	0.0180	0.0222	PO21	0.0373	0.0284	0.0171	0.0219
EG31	0.0354	0.0206	0.0217	0.0233	PO22	0.0286	0.0260	0.0238	0.0222
EG32	0.0211	0.0159	0.0215	0.0230	PO23	0.0239	0.0237	0.0232	0.0252
EG33	0.0253	0.0254	0.0187	0.0221	PO31	0.0340	0.0338	0.0243	0.0247
EG41	0.0184	0.0146	0.0223	0.0247	PO32	0.0340	0.0372	0.0184	0.0223

Source: From the calculation.

4.3. Calculate Composition Weights

The weights of each single evaluation method in Table 2 are brought into Equation (15) to obtain the combined weight coefficient $a_c = (0.2583, 0.2542, 0.2370, 0.2503)$. This combination weight coefficient is brought into Equation (16), and the combined weight of each index can be obtained, as shown in Table 3. Table 3 shows that the government support capability (GS), corporate green capacity (EG), NGO supervision and guidance (NS), public participation capacity (PP), and the park output efficiency (PO) mean 0.2693, 0.2435, and 0.1454 respectively. 0.1313, 0.2107. It can be seen that at present, government support capabilities have the greatest impact on the green growth capacity of the state-level new districts, followed by corporate green capabilities, park output benefits, NGO supervision, and public participation.

Table 3. Evaluation Index Combination Weights.

Index	Combination weight	Index	Combination weight	Index	Combination weight	Index	Combination weight
GS11	0.0172	GS43	0.0192	EG42	0.0226	PP13	0.0238
GS12	0.0232	GS51	0.0184	EG43	0.0232	PP21	0.0295
GS13	0.0201	GS52	0.0188	EG44	0.0211	PP22	0.0306
GS21	0.0174	EG11	0.0219	NS11	0.0237	PO11	0.0260
GS22	0.0183	EG12	0.0229	NS12	0.0212	PO12	0.0271
GS23	0.0225	EG21	0.0208	NS21	0.0263	PO13	0.0245
GS31	0.0168	EG22	0.0222	NS22	0.0260	PO21	0.0264
GS32	0.0174	EG31	0.0254	NS31	0.0251	PO22	0.0252
GS33	0.0238	EG32	0.0204	NS32	0.0231	PO23	0.0240
GS41	0.0172	EG33	0.0230	PP11	0.0243	PO31	0.0293
GS42	0.0188	EG41	0.0200	PP12	0.0230	PO32	0.0282

Source: From the calculation.

4.4. Comprehensive Evaluation Analysis

From the point of view of total scores, the standardized data of each indicator and the combination weight coefficient are brought into formula (17), and the total score of the evaluation object can be obtained as shown in Table 4. Among them, Jinpu New District 0.2685, Pudong New District 0.8253, Binhai New District 0.5680, Nansha New District 0.3226 It can be seen that Pudong New Area's green growth capacity is far from the other three new districts. Jinpu New District, as a newly built new district, has a lower level of green growth than the other three new districts. The main reason for this result is that Jinpu New District is significantly weaker than the other three new districts in terms of government support, NGO supervision and guidance, and public participation. It still needs to be strengthened and improved.

5. Conclusion

In this paper, through the effective review of related literature, combined with the development status of China's national-level new districts, we construct the evaluation index system for green growth capacity of the national new district from the five aspects of government support capacity, corporate green capacity, NGO supervision and guidance, public participation capacity, and park output efficiency to empirically measure the green growth capacity of Jinpu New District, Pudong New Area, Binhai New Area and Nansha New District. Compared with similar papers, the innovations in this paper are as follows: 1) Based on the perspective of the value chain, an evaluation index of the green growth capacity of the national-level new district was constructed; 2) In the evaluation method, this paper adopts not a single evaluation method, but adopts The G1 method, G2

Table 4. Evaluation scores of each new district.

	Total Score	GS	EG	NS	PP	PO
Jinpu	0.2685	0.0352	0.0929	0.0421	0.0470	0.0512
Pudong	0.8253	0.1857	0.2288	0.1024	0.1159	0.1925
Binhai	0.5680	0.1533	0.1657	0.0806	0.0806	0.1243
Nansha	0.3226	0.1153	0.0402	0.0577	0.0603	0.0490

Source: From the calculation.

method, entropy method, and the optimal combination weighting method of the maximum deviation method are combined to effectively avoid the subjective and objective evaluation of their own deficiencies.

The final study found that government support capacity has the greatest impact on the green growth capacity of state-level new districts, followed by corporate green capacity, park output benefits, NGO supervision and guidance, and public participation. From each region, Pudong New Area has the largest green growth capacity, followed by Binhai New District, Nansha New District and Jinpu New District. Among them, the development of the Pudong New Area is the most balanced and the scores of each sub-subject are at a relatively high level. The indicators with larger weights are all superior to the other new districts. The sub-divisions of Jinpu New District are relatively low; especially the government support ability scores that have the greatest impact on the new district's green growth capacity are far lower than those of other new districts, indicating that the government of Jinpu New District should increase its support.

Although this article has achieved some research results, there are still some deficiencies. First of all, this paper does not pay attention to the mechanism of the green growth capacity of the national-level new district. In the future research, this theme can be further studied from the perspective of formation mechanism. Secondly, in the research method, this paper does not consider the relevance among the various indicators, especially the sub-capabilities. Therefore, in the future research, the ANP model that considers the relationship between indicators can be included in the optimal combination evaluation model.

References

Ditlev-Simonsen, C. D., & Wenstøp, F. (2013). How Stakeholders View Stakeholders as CSR Motivators. *Social Responsibility Journal, 9,* 137-147. https://doi.org/10.1108/17471111311307868

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston: Pitman.

Guo, Y. J. (2002). *Comprehensive Evaluation Theory, Method and Application*. Beijing: Science Press, 44-51.

Huang, Z. S., Hu, P., & Nie, J. J. (2012). Cross Efficiency Evaluation Method Based on Maximizing Deviations. *Operations Research and Management Science, 21,* 177-181.

Li, B. Z., Xu, G. Y., & Su, Y. (2013). Regional Knowledge Acquisition Model Based on Optimal Combination Weight—The Empirical Analysis of 31 Provinces. *China Soft Science, 12,* 68-81.

Li, L. Y. (2015). State Rescaling and National New Area Development in China: The Case of Chongqing Liangjiang. *Habitat International, 50,* 80-89. https://doi.org/10.1016/j.habitatint.2015.08.009

Li, M. J., Chen, G. H., & Chen, Y. T. (2004). Study on Target Standardization Method of Comprehensive Evaluation. *Chinese Journal of Management Science, 12,* 45-48.

Li, X., Zhao, Y., Shi, C. et al. (2015). Application of Water Evaluation and Planning (WEAP) Model for Water Resources Management Strategy Estimation in Coastal Binhai New Area, China. *Ocean & Coastal Management, 106,* 97-109. https://doi.org/10.1016/j.ocecoaman.2015.01.016

Peng, J., Wei, H., Li, G. C., Chen, X., & Yuan, Y. (2015). Research on Location Accessibility of National New Areas Based on Urban Agglomerations. *Geographical Research, 34,* 3-14.

Wang, X. J., Guo, Y. J., & Zhao, L. Q. (2005). The Method of Dynamic Constitution Evaluation and Its Application in Supplier Selection. *Management Review, 17,* 40-43.

Ye, H., Li, G. C., Li, L., Wang, Q., & Zhang, H. (2015). Development Potential and Future Direction of National New Areas—A GRNN Approach. *Economic Geography, 35,* 92-99.

Zhao, D. F., Wu, C. Y., & Shang, H. (2018). Study on Influencing Factors of Green Growth Capacity for National New Areas. *Science & Technology Progress and Policy,* in Press. (In Chinese)