FOREIGN EXPERIENCE

DOI: 10.15838/esc.2018.4.58.11
UDC 332.1, LBC 65.049

Performance Evaluation of Regional Ecological Capital Operation of China: Taking Poyang Lake Eco-Economic Zone of China for Example*

He Xiongwei
Jiangxi Academy of Social Sciences
E-mail: Hexw529@gmail.com

Abstract. In recent years, the ecological capital becomes the factor that has important influence on the economic development. To establish the ecological capital operation performance evaluation model and to make comprehensive measurement of regional ecological capital operation, we can effectively measure the regional ecological and economic coordination degree and provide relevant basis for formulating the regional economic development and environmental protection policy. In general, there are few scholars making research on ecological capital operation; and also there are some disputes on the connotation and mode of ecological capital operation. Therefore, on the basis of domestic and foreign scholars' research, and taking Poyang Lake Eco-economic Zone in China as an example, the regional ecological capital operation performance evaluation index system was established from three dimensions including economic value, ecological value and social value in this paper. The paper combines the expert evaluation with objective weighting method and entropy evaluation method to jointly confirm the index weighting, then to construct the regional comprehensive capital operation index, therefore to perform empirical analysis of regional ecological capital operation. The conclusion is that the ecological capital operation performance of Poyang Lake Eco-economic Zone is constantly increasing. However, in the score of ecological capital operation performance evaluation, the growth speed of economic performance is the fastest, the second is social performance and the last is ecological performance, which means that the

* The work has been carried out with the support of the Project of the National Social Science Foundation of China, Project No.: 15CJY015.

For citation: He Xiongwei. Performance evaluation of regional ecological capital operation of China: taking Poyang Lake Eco-economic Zone of China for example. *Economic and Social Changes: Facts, Trends, Forecast*, 2018, vol. 11, no. 4, pp. 173–184. DOI: 10.15838/esc.2018.4.58.11

investment in ecological environment in the ecological capital operation process is insufficient. It provides a good idea to explore the comprehensive development of great lakes region and pursue the coordinated development path between ecological protection and economic development.

Key words: China, Poyang Lake Eco-economic Zone, ecological capital operation, index system, performance evaluation.

I. Introduction

On Dec. 12, 2009, the State Council, formally approved *Planning of Poyang Lake Eco-economic Zone*. Poyang Lake Eco-economic Zone was formally upgraded to Chinese strategy. The planning specifies the strategic guideline of adhering to ecological first and promoting leapfrog development, which indicates the new opportunity for sustainable development of ecology-economy-society of Jiangxi Province. However, with great advance of industrialization, urbanization, and agricultural industrialization of Poyang Lake Eco-economic Zone, the region is still facing great pressure of resource and environment [1]. Therefore, under the new situation of increasingly aggravation of contradiction between economic development and resources and environment, how to actively develop ecological construction and promote the ecological and economic sustainable development has become the important problem to be solved at present. The key to solve the problem is theory and practice innovation. The ecological capital operation is the reflection of traditional economic growth mode. Due to the scarcity and uniqueness of ecological resources, the ecological capital becomes the factor that has important influence on the economic development. Therefore, in recent years, the ecological capital operation has become an important emerging field. At present, China has taken Poyang Lake Eco-economic Zone as the new mode to explore the comprehensive development of great lakes region and pursue the coordinated development path between ecological protection and economic development. To greatly promote the ecological capital operation is also an important attempt to realize regional leap-forward development. Establish the ecological capital operation performance evaluation model and make comprehensive measurement of regional ecological capital operation to quantitatively judge whether the social and economic development is in the scope of sustainable development, effectively measure the regional ecological and economic coordination degree and provide relevant basis for formulating the regional economic development and environmental protection policy.

II. Literature Review

Research status

The ecological capital is also called green capital. As it was proposed not long ago, there is great divergence on the concept of ecological capital at home and abroad. Many researches are based on the concept of natural capital and environment capital. Vogt(1948) believes that natural resources are actually the capital of national development [2].Kerry Smith (1988) believes that natural resources and environmental resources should be used as assets [3].Sarag eldin (1995) suggests that natural capital or ecological capital refers to all natural resources [4]. Daily. G (2000) believes that ecological capital refers to the stock of natural resources and environmental capital that can provide useful products or services in the present or future [5]. Costanza Retal

(1997) believes that ecological capital refers to the amount of material or information that exists at a certain time [6]. Liu SiHua (1997) argues that ecological capital includes two aspects of ecological resources and ecological environment [7]. Wang HaiBing (2009) considered that ecological capital is the ecological environment quality factor, structure and trend of ecological service value or production support function [8]. Yan lidong et al. (2011) argue that ecological capital refers to all natural resources, man-made resources and ecosystem services that can create benefits [9].

The author believes that the ecological capital is the ecological resource and ecological environment that can bring economic and social benefits, which mainly includes total natural resources, environment quality and self-cleaning capacity and produce ecological potential with using value, ecological environment quality and overall using value of ecological system, etc.[10].The ecological capital operation is an emerging topic. In general, there are few scholars making research on ecological capital operation; there are disputes on the connotation and mode of ecological capital operation and there is very little research on the ecological capital operation evaluation. Therefore, on the basis of researches of domestic and foreign scholars, a set of scientific regional ecological capital operation performance evaluation index system was established in this paper to better promote the development of ecological capital operation in China.

III. Building of regional ecological capital operation performance index system

(I) Connotation of regional ecological capital operation

The ecological capital operation, as the brand new concept in this century have been affirmed and accepted by many scholars. The ecological capital operation is the practical means of realizing ecological service value. The ecological capital operation is to develop the overall ecological service value of ecological capital, effectively and reasonably use the value of ecological capital to obtain economic return, support the social and economic development and ecological environment construction in the region, further develop the social economy and ecological environment quality to promote the continuous accumulation of ecological capital and form the positive cycle of mutual promotion and mutual development of ecology-economy and society. The ecological capital operation of Poyang Lake Eco-economic Zone depends on the ecological resources of Poyang Lake Eco-economic Zone, adopts government promotion and market leading and uses reasonable resource transformation mode to obtain the preservation and appreciation of ecological resources in the region, finally realize the continuous cycle accumulation of ecological capital and form the sustainable ecological development. In short, it's the behavior to realize ecological economization of the region [11].

It's well-known that, in the historical process of realizing industrialization, western developed countries basically go on the non-sustainable path at the cost of sacrificing resources and environment, the economic development mode has imposed challenge to the basic living of human with the aggravation of resources and environment element bottleneck problem s, so the retrospection of existing economic development mode is a must. Therefore, for future economic development, we must improve the comprehensive utilization efficiency of resources and environment elements, constantly improve the technology

in the process to improve the overall economic development level and enhance the sustainable development ability. Led by green development strategy in China, at present, various regions of China are performing strategic structural transformation of economic development. One of the purport is to abandon the past traditional development mode of high energy consumption, high material consumption and high emission and explore a green development path. Therefore, Chinese Government also puts forward the new means of ecological environment control. For example, the implementation of new environmental protection law, proposal of environmental responsibility extension system and establishment of GDP assessment system bring new challenge to the local economic development. Especially, most of underdeveloped regions are facing the dilemma of economic development, industrial structure optimization and ecological environment protection. To accelerate the improvement of ecological capital operation efficiency, promote the expansion of ecological capital are important breakthrough for current economic transformation. On the premise of harmonious development between human and nature, greatly promote the ecological protection and form the ecological industry system to make the ecological industry as main source of economic growth. The ecological capital operation system is the society-ecology-nature composite ecological system, which not only includes the natural system, and more importantly, increases the social and economic system with mankind as the core[12]. Therefore, how to quantitatively research the sustainable development degree of ecological capital operation in the region? Which region develops better and becomes the model of sustainable development? How to maintain the sustainable development mode of a region? To solve these problems, be sure to adopt quantitative research method. This topic tries to adopt quantitative research analysis method to measure the regional ecological capital operation efficiency. Although quantitative research may not truly reflect the status, as the scientific attempt, it's worthy of study to provide theoretic basis for formulating reasonable development policy for regional ecology in the region.

(II) Basic principles of building ecological capital operation evaluation system

Be sure to comply with following principles when setting the evaluation system:

1. Directivity. The ecological capital operation evaluation based on green development background aims to regulate and lead the sustainable development direction of various regions. The assessment should fully reflect the "green" connotation of ecological civilization, consider the sustainable development and estimates the objective accessibility, so as to truly reflect the scientific outlook on development and the objective requirement of ecological civilization construction [13].

2. Difference. Due to different features in different places, when formulating the ecological efficiency and ecological capital operation evaluation index system, follow the basic principle and requirement of evaluation assessment, adhere to the orientation of scientific development, formulate the evaluation index as per local conditions of different regions, reflect the local features and comply with local actual conditions. Avoid adopting "one common method" regardless of the actual condition.

3. Scientificity. The index system must be established on the basis of science. The index concept must be clear with scientific connotation, fully measure and reflect the regional

development degree and ensure the authenticity and objectiveness of evaluation results. The ecological capital operation evaluation system index should be quantified. Some indexes with important significance that is hard to be qualified can be described by qualitative indexes. Various indexes should be mutually independent to avoid repeated calculation.

4. Integrity. The index system, as a whole, has wide coverage and comprehensively reflects main characteristics of sustainable development. It should reflect the subsystem development index and the direct coordination index of subsystems. The evaluation index system can be divided into several hierarchical structures to make the index reasonable and clear. Comprehensively consider the composition of content and logical correlation, make system analysis and confirm it reasonably.

5. Dynamic nature. From the perspective of optimized assessment of ecological capital operation evaluation system, the assessment index should focus on the result index and correctly treat apparent and potential performance. Correctly analyze the current and long-term development. Laying the foundation, long-term and sustainable development is important orientation of evaluation. The evaluation not only focuses on the current status but also analyzes the past basis and future impact. Therefore, when designing the index system, the overall evaluation system should be constantly changing and there is corresponding dynamic change index to guide the sustainable development level of the whole region [14].

(III) Index system setting of ecological capital operation performance evaluation system

The dimension building of regional ecological capital operation evaluation depends on the value orientation while the value of regional ecological capital operation involves three dimensions including economic value, ecological value and social value[15]. Therefore, to establish the ecological capital operation performance evaluation index system, we must set the specific performance evaluation index system from three aspects including economy, ecology and society. In the regional ecological capital operation performance evaluation, the economic performance, ecological performance and social performance are an organic integrity, complementary to each other and indispensable. The harmonious development of three aspects can promote the good operation of regional ecological capital. As per above principles and relevant research of other scholars, this report establishes four-level index system frame including objective level, benchmark level, criterion level and index level. (Refer to *Table 1* for details)

Objective level: To quantitatively reflect the ecological index operation status and development difference of regions, the report designs the objective level---regional ecological capital operation performance evaluation system. The system is the comprehensive reflection of industrial development, economic potential, ecological environment, resource utilization, people's life and social culture of the region.

(2) Benchmark level: to further reflect subsystems in the regional ecological capital operation on the comprehensive indexes, this paper designs three sub-objective levels including economic performance evaluation system, ecological performance evaluation system and social performance evaluation system. It better reflects the concept of regional economic, environment and social ecological operation performance condition.

Table1. Regional Ecological Capital Operation Performance Evaluation Index System

Objective level	Criterion level	Scheme level	Index level (unit)
Regional ecological capital operation performance Evaluation	Economic performance (0.4)	Industrial development (0.2)	Gross regional domestic product (100 million yuan)
			Gross output value of farming, forestry, animal husbandry and fishery (10 thousand yuan)
			Total output value of forestry industry (10 thousand yuan)
			Foreign exchange income of international tourism in the region (USD 10 thousand)
			Income of domestic tourism (100 million yuan)
			Commercializing rate of farming, forestry, animal husbandry and fishery (%)
		Economic potential (0.2)	Per-capita GDP (yuan/person)
			Fixed assets investment of water conservancy, environment and public facilities management (10 thousand yuan)
			Fiscal expenditure of ecological protection (10 thousand yuan)
			Labor productivity of total workers (yuan/person)
			Funds for scientific and technological input from the government (one thousand yuan)
	Ecological performance (0.3)	Ecological environment (0.15)	Total water resources (100 million m^3)
			Forest coverage rate (%)
			Proportion of nature reserves to the jurisdiction (%)
			Total accumulation of standing trees (10 thousand m3)
			Per-capita park greening area (m^2)
			Established green coverage (%)
		Resource consumption (0.15)	Industrial energy consumption above designated size (standard coal of 10 thousand tons)
			Sewage treatment rate (%)
			Harmless treatment rate of domestic waste (%)
			Re-utilization rate of industrial water (%)
			Comprehensive utilization rate of general industrial solid wastes (%)
	Social performance (0.3)	People's life (0.15)	Disposable income of urban residents (yuan)
			Disposable income of rural residents (yuan)
			Population density (person/km^2)
			Natural population growth rate (‰)
			Urbanization rate (%)
		Social culture (0.15)	Number of public libraries (Nos)
			Number of museum (Nos)
			Radio and television coverage (%)
			Number of Health Care Institutions (Nos)

(3) Criterion level: The economic performance evaluation system mainly reflects the economic development level and economic development stage by two aspects including industrial development and economic potential. The ecological performance evaluation system mainly reflects the comprehensive environment performance condition of region by two aspects including resource utilization and ecological environment. The social performance evaluation system mainly reflects the regional social development level by three aspects including people's life and social culture.

(4) Index level: after adjustment, the comprehensive competitiveness index system includes 3 secondary indexes, 6 tertiary indexes and 31 quaternary indexes (refer to Table 1). Wherein, the economic performance adopts 11 indexes, 11 ecological performance indexes and 9 social performance indexes.

The report combines the expert evaluation method and objective weighting method entropy evaluation method to jointly confirm the index weighting (economic performance, ecological performance and social performance of 40%:30%:30% weighting), reflects the comprehensive performance evaluation score as specific item index, construct the regional comprehensive capital operation index and perform empirical analysis of regional ecological capital operation.

IV. Analysis of Ecological Capital Operation Performance Evaluation

(I) Measurement of ecological capital operation performance evaluation

1. Measurement method

This report firstly sets the ecological capital operation performance index system and indexes mainly include ten indexes in economic social and ecological aspects. As the index original data is complicated and the unit of index original data is different, we should standardize the original data. After standardized processing of original data, there is positive and negative, the score result is positive negative, although it doesn't influence the ranking, it's not intuitive. For observation and comparison, this report adopts the standardization calculation formula as follows:

For positive index:

$$U_{ij}=(X_{ij}-\min X_{ij})\times 0.95/(\max X_{ij}-\min X_{ij})+ +0.05(j=1,2,...,n);$$

For reverse index:

$$U_{ij}=(\max X_{ij}-X_{ij})\times 0.95/(\max X_{ij}-\min X_{ij})+ +0.05(j=1,2,...,n),$$

Wherein, X_i (i=1,2,..., n) is the no. i economic or ecological and social index,

X_{ij} is No. j index of No. i sample and it's X_{ij} (j=1,2,...,m).

U_{ij} is the data after standardization, and $\max_{Xij}$ and $\min_{Xij}$ are upper and lower limit of No. i index.

The economic performance, ecological performance level and social performance level can be obtained by linear weighting method:

$$U_i=\sum_{j=1}^{m} w_{ij}u_{ij} \quad \sum_{j=1}^{j=m} w_{ij}=1 \ ,$$

Where, U_i is the economic performance, ecological performance or social performance, and w_{ij} is the weighting of various economic, ecological environment or social indexes.

2. Weight setting

The weight is determined with reference to relevant authoritative index system evaluation experience by qualitative and quantitative method, which combines the expert evaluation method and objective weighting method entropy evaluation method to confirm that the report makes statistical analysis of index system.

(II) Empirical results analysis

1. Data source

Poyang Lake Eco-economic Zone covers Nanchang City, Jingdezhen City, Yingtan City, some counties (cities and districts) including Jiujiang, Xinyu, Fuzhou, etc., totally 38 counties and cities. Considering the data collection convenience and research consistency and comparative convenience, the topic adopts the data of Nanchang City, Jingdezhen City, Jiujiang City, Xinyu City, Yingtan City and Fuzhou City. Data in this report is mainly from statistical yearbook of Jiangxi Province and statistical yearbook data of other cities in 2013–2016.

2. Calculation results

Table 2 reflects the changing trend of ecological capital operation performance of Poyang Lake Eco-economic Zone in 2012–2015.

Table 2. Ecological capital operation performance of Poyang Lake Eco-economic Zone in 2012–2015 (overall index)

	2012	2013	2014	2015
Economic performance	2.50	3.22	3.70	3.78
Ecological performance	2.20	2.48	2.38	2.67
Social performance	2.04	2.13	2.49	2.78
Overall performance of ecological capital operation	6.74	7.83	8.57	9.23

Table 3. Ecological capital operation performance of Poyang Lake Eco-economic Zone in 2012-2015 (item index)

	2012	**2013**	**2014**	**2015**
Industrial development	1.20	1.56	1.82	1.94
Economic potential	1.30	1.66	1.88	1.84
Ecological environment	1.30	1.21	1.11	1.21
Resource consumption	0.90	1.27	1.27	1.45
People's life	1.14	1.01	1.18	1.29
Social culture	0.90	1.12	1.31	1.49

The table shows that the ecological capital operation performance of Poyang Lake Eco-economic Zone is constantly increasing no matter from comprehensive index and itemized index, which reflects that the ecological development ability is gradually enhanced.

(1) Overall performance evaluation

From the overall performance, the score of ecological capital operation performance evaluation of Poyang Lake Eco-economic Zone was 6.74 in 2012 and increased to 9.23 in 2015, with annual average growth rate of 11.06%. Wherein, for economic performance level, the score of economic performance evaluation was 2.50 in 2012 and increased to 3.78 in 2015, with annual average growth rate of 14.76%; for ecological performance, the score of economic performance evaluation was 2.20 in 2012 and increased to 2.67 in 2015, with annual average growth rate of 6.65%; for social performance, the score of ecological performance evaluation was 2.04 in 2012 and increased to 2.78 in 2015, with annual average growth rate of 10.93%. In the score of ecological capital operation performance evaluation, the growth speed of economic performance is the fastest, the second is social performance and the last is ecological performance.

(2) Itemized performance evaluation

In the item evaluation of capital operation performance of Poyang Lake Eco-economic Zone, for economic performance evaluation, the score of industrial development index was 1.20 in 2012 and increased to 1.94 in 2015, with annual average growth rate of 17.28%; the score of economic potential index was 1.30 in 2012 and increased to 1.84 in 2015, with annual average growth rate of 12.34%; for ecological performance evaluation, the score of ecological environment index was 1.30 in 2012 and decreased to 1.21 in 2015, with annual average growth rate of -2.24%; the score of resource consumption index was 0.9 in 2012 and increased to 1.45 in 2015, with annual average growth rate of 17.33%; for social performance evaluation, the score of people's life was 1.14 in 2012 and increased to 1.29 in 2015, with annual average growth rate of 4.27 and the score of social culture was 0.9 in 2012 and increased to 1.49, with annual average growth rate of 18.36%. In the item index of ecological capital operation performance of Poyang

Lake Eco-economic Zone, the social culture index has the fastest growth and the second is industrial development index. The ecological environment index with low growth rate even decreased in 2012 and 2015, which means that the investment in ecological environment in the ecological capital operation process is insufficient.

V. Conclusion and Suggestions

(I) Conclusion

Poyang Lake Eco-economic Zone is located in Jiangxi Province in inland of China. However, Jiangxi province is a traditional agricultural province and it's industry is lagged behind. Compared with the ecological economic development level in China and central provinces, Jiangxi Province ranks the first in the central region but it's lower than the average level of China. Jiangxi Province ranks the first in Central China in terms of ecological environment level, resource consumption level and ecological protection ability, with obvious advantages. However, the economic development level and comprehensive resource utilization level are obviously disadvantaged. Jiangxi Province in Central Region is relatively lagged behind in China and suffers great pressure of post-economic development. The above analysis shows the following conclusions:

1. Poyang Lake Eco-economic Zone has achieved good performance in ecological capital operation of agriculture, industry and tourism industry, but has poor concept of ecological capital operation. For a long time, the concept of no cost and price to environment is very common. Lagged production technology and adverse external phenomena are serious. With the population growth and acceleration of industrialization and urbanization process, some places in the region pursue economic benefits unilaterally and unreasonably utilize resources, which cause free and excessive use of ecological resources, excessive deforestation, random discharge, overfishing, unrestrained water utilization and other harmful effects and seriously deterioration of ecological environment. Therefore, how to improve the ecological environment of Poyang Lake Basin and realize the coordinated development of economy, society and ecology is a big problem at present. Reasonable use of marketization means is good for enhancing the concept of "ecology with value", limiting environmental damage and mobilizing the initiative of ecological construction [16-17].

2. As per the analysis of changing trend of ecological capital operation performance of Poyang Lake Eco-economic Zone in 2012-2015, the ecological capital operation performance of Poyang Lake Eco-economic Zone is constantly increasing no matter from comprehensive index and itemized index, which reflects that the ecological development ability is gradually enhanced. In the score of ecological capital operation performance evaluation, the growth speed of economic performance is the fast, the second is social performance and the last is ecological performance. In the item index of ecological capital operation performance of Poyang Lake Eco-economic Zone, the social culture index has the fastest growth and the second is industrial development index. The ecological environment index with low growth rate even decreased in 2012 and 2015, which means that the investment in ecological environment in the ecological capital operation process is insufficient.

(II) Suggestions

The ecological capital operation of Poyang Lake Eco-economic Zone depends on the ecological resources of Poyang Lake Eco-economic Zone and adopts government promotion and

market leading to realize the preservation and appreciation of ecological resources in the region and finally promote the sustainable development of the region.

1. Quickly formulate the ecological capital strategy of Poyang Lake Eco-Economic Zone

Focus on the strategic objective of Poyang Lake Eco-economic Zone, formulate the *Planning for Ecological Capital Operation of Poyang Lake Eco-economic Zone*, specify the long-term objective and stage objective, operation roadmap and prior fields of ecological capital operation of Poyang Lake Eco-economic Zone and gradually realize the maximum ecological capital gains in the ecological capital threshold range of Poyang Lake Eco-economic Zone. To formulate the supporting policy of ecological capital operation and change the existing development achievement assessment system is the core of ecological capital operation policy. It's suggested formulating the specific industry guiding catalog of ecological capital operation of Poyang Lake Eco-economic Zone to specify and encourage supporting key industry scope of ecological capital operation of Poyang Lake Eco-economic Zone. It's suggested enhancing the fiscal support force, establishing the emission right transaction pilot and wetland compensation pilot in Poyang Lake Eco-economic Zone, actively increase the carbon sink resources and carry out carbon sink transaction to promote the ecological capital value realization and appreciation in the zone [18].

2. Complete the ecological compensation mechanism of Poyang Lake Eco-Economic Zone

The ecological compensation of Poyang Lake Eco-economic Zone can be completed under the guidance of the government. From the government level, establish the ecological compensation mechanism of the basin from top to down. The ecological compensation mechanism of basin cross Jiangxi and downstream administrative region should be established by the Central Government, and the ecological compensation mechanism of basin in cities in the region should be established by Jiangxi Province People's Government; from the basin level, it should be done from big to small, i.e. the coordination of ecological environment protection and social and economic development of basin should be carried out from the basin to province, city and county scope.

Establish and complete the inter-government fiscal transfer payment system. The Central Finance should enhance the transfer payment force of key ecological function area in central and western regions, establish the special fund for supporting key ecological function area; secondly, lead the provincial or lower level government to establish the finance transfer payment system, e.g. eastern coastal developed provinces output ecological resources to underdeveloped provinces in central and western regions for compensation; moreover, establish the fund, issue medium and long-term special ecological construction bonds or issue the lottery to raise fund; finally, levy "ecological compensation tax" to replace various charges collected by various departments, including resource fee, water and soil conservation cost, sewage charge, etc.; fee-to-tax can enhance the collection force, lower the collection cost and use the fund for the ecological compensation.

3. Focus on the ecological capital operation in the industrial development

There are three paths of ecological capital operation of Poyang Lake Eco-economic Zone: the first path is to develop ecological agriculture

and operate biological production environment capital and establish the green agricultural and sideline products supply base; the other path is to develop ecological tourism industry, operate the quality natural resource and environment, mainly operate landscape capital like leisure resort base, etc.; the final path is to develop ecological industry, comprehensively use the ecological resource and environment and perform overall operation and cycle operation of ecological capital. Properly carry out ecological item and product development operation; reasonable projects suitable for local conditions can effectively promote the classification and integration of ecological resources of Poyang Lake Eco-Economic Zone. Innovatively promote the marketized operation of featured project and realize the preservation and appreciation of ecological resources in Poyang Lake Eco-Economic Zone.

4. Enhance the environmental protection awareness of citizens

Actively carry out various environment promotion education activities, publicize the environment information and motivate social forces to participate in the environmental protection. Give full play to the public opinion leading and supervision function, vigorously promote environmental protection policies and laws and regulations and improve the public's environmental protection awareness and legal sense. Make all-round and multi-layer adaption and establish the production and living mode meeting the resource-saving and environment-friendly social requirements. Set up environmental protection courses or training courses, improve the awareness and ability for implementing scientific outlook on development and environmental and development decisions of leading cadres at various levels and enterprise management personnel and cultivate the environmental protection awareness of the teenager. Encourage and lead the public and social organizations to actively participate in the environmental protection, widely carry out mass creation activities including green school, green family, green community, etc., advocate green consumption and give full play to the function of mass organizations like Labor Union, the Communist Youth League, the Women's Federation, etc. [19-20].

References

1. H. Xiongwei, S. Yuping. Industrial Structure Adjustment and Optimized Path Selection in Jiangxi Province under the Environmental Constraint. *Enterprise Economy*, 2012, (11), pp. 145–149.
2. Vogt W. *Road to Survival*. New York: William Sloan. 1948. Pp. 129–157.
3. V. K. Smith Resource Evaluation at the Crossroads. *Resources*, 1988, (90), pp. 2–6.
4. I. Sarag Eldin *Sustainability and the Wealth of Nations- First Steps in an Ongoing Journey*. Washington, DC: World Bank, 1995.
5. C. Retal The Value of the World's Ecosystem Services and Natural Capital. *Nature*,1997, no. 38(7), pp. 253–260.
6. Daily G. The Value of Nature and the Nature of Value. *Science*, 2000, no. 289.
7. SiHua L. *Sustainable Development Economics*. Bei Jing: China Renmin University Press, 1997. Pp. 1–10.
8. HaiBin W. *Ecological Capital and its Operation Theory and Application.* Bei Jing: China Agricultural University, 2005. Pp. 23–27.
9. Cheng GungJu,Liu JiangLin, Yan LiDong. Research on the Value of Ecological Capital Operation. *China Population, Resources and Environment*, 2011, no. 1, pp. 141–147.
10. Xiaoyu L., Zhaobo M. Ecological Capital Operation based on Externality Perspective. *Journal of Nantong University (Social Science Edition)*, 2014, no. 7, pp. 121–126.

11. Xu Ch., Huajiao Q., Haibin W. et al. New Perspective of Realizing Ecological Service Value (III). Theoretical Frame and Application of Ecological Capital Operation. *Ecological Economy*, 2008, no. 8, pp. 36–40.
12. Yong G., Jun W. Comprehensive Assessment of Ecosystem of Cities,Integrative Industries Based on Gray Hierarchy Analysis. *China Population, Resources and Environment*, 2010, no. 1, pp. 112–117.
13. Wai He L. Research on the Performance Appraisal Mechanism of Fuling Area's Ecological Civilization Background. *Bridge of Century*, 2012, no. 8, pp. 95–97.
14. Yong D., FengXing L. Research Status of Sustainable Development Index System and Expectation Statistics and Prediction. 2003, no. 10, pp. 34–36.
15. JiangLin L., ShuJu L., BangWei Zh. Regional Ecological Capital Operation Performance Evaluation Index System And Empirical Study. *Journal of China University of Geosciences (Social Sciences Edition)*, 2014, no. 7, pp. 75–80.
16. Xiaoyu L. Research on Green Agriculture Ecological Capital Operation of Poyang Lake Eco-Economic Zone. *Enterprise Economy*, 2015, no. 10, pp. 127–130.
17. Xiaoyu L. Research on Ecological Tourism Capital Operation of Poyang Lake Eco-Economic Zone. *Enterprise Economy*, 2014, no. 10, pp. 127–130.
18. Xiongzhi Z. Research on Ecological Capital Operation Strategy of Poyang Lake Eco-Economic Zone. *Enterprise Economy*, 2014, no. 8, pp. 16–19.
19. Ministry of Environmental Protection of the People's Republic of China. The "12th Five-year Plan" of Environmental Protection in China. *China Environmental Protection Industry*, 2012, no. 1, pp. 7–12.
20. CaiHua M. The Public Participation in Environmental Management of Research with Chinese Characteristics. *QingDao: Ocean University of China*, 2007, no. 5, pp. 32–35.

Information about the Author

He Xiongwei – associate editor of Editorial Office of Enterprise Economy of Jiangxi Academy of Social Sciences (China, e-mail: Hexw529@gmail.com)

Received September 27, 2017.