

Systematic Construction of the Development Index Circular Economy of Measurement Area of Guiyang City Based on DPSR Framework

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Abstract: Under the DPSR framework, the construction of the system for measuring the circular economy development indicators in Guiyang City was started. The development progress of the measurement of circular economy in region as a systematic goal was carried out, and the indicator system was designed under the DPSR framework. Reducing, reusing and recycling are the main developing principle, and the reform of large-scale growth and large-scale consumption will be carried out. Taking Guiyang's circular economy as an example, it will transform the development path of circular economy in Guiyang, realize economic growth, and separate resources.

Since Guiyang began to explore the development of circular economy, it is important to build a circular economy ecological city in the image of Guiyang's economic and social status. China has set Guiyang as the first pilot city in the country to build a circular economy ecological city. According to the relevant requirements of the State Environmental Protection Administration and its own development situation, Guiyang City has enriched the strategy of building a circular economic and ecological city, and proposed a new strategic goal to build an ecological economy city of Guiyang by developing a circular economy. With continuous development, Guiyang's circular economy has made real-time progress.

1. Framework Design for Measuring Regional Circular Economy Development

On the basis of sustainable development, developing the measurement of regional circular economy must adhere to the development requirements of China. The framework reflect the patterns and changes in the development process in cities. Comprehensive analysis of regional economic and environmental systems adhere to sustainable production, and provide metrics for urban construction.

The measurement of regional circular economy development needs to be supported by a working framework, which integrates and analyzes a large amount of data. The DPSR framework (driving force-pressure-state-response) can meet its needs. The logical relationship in the DPSR framework reflects the social relationship with people as the main body. The model is shown in Figure 1.

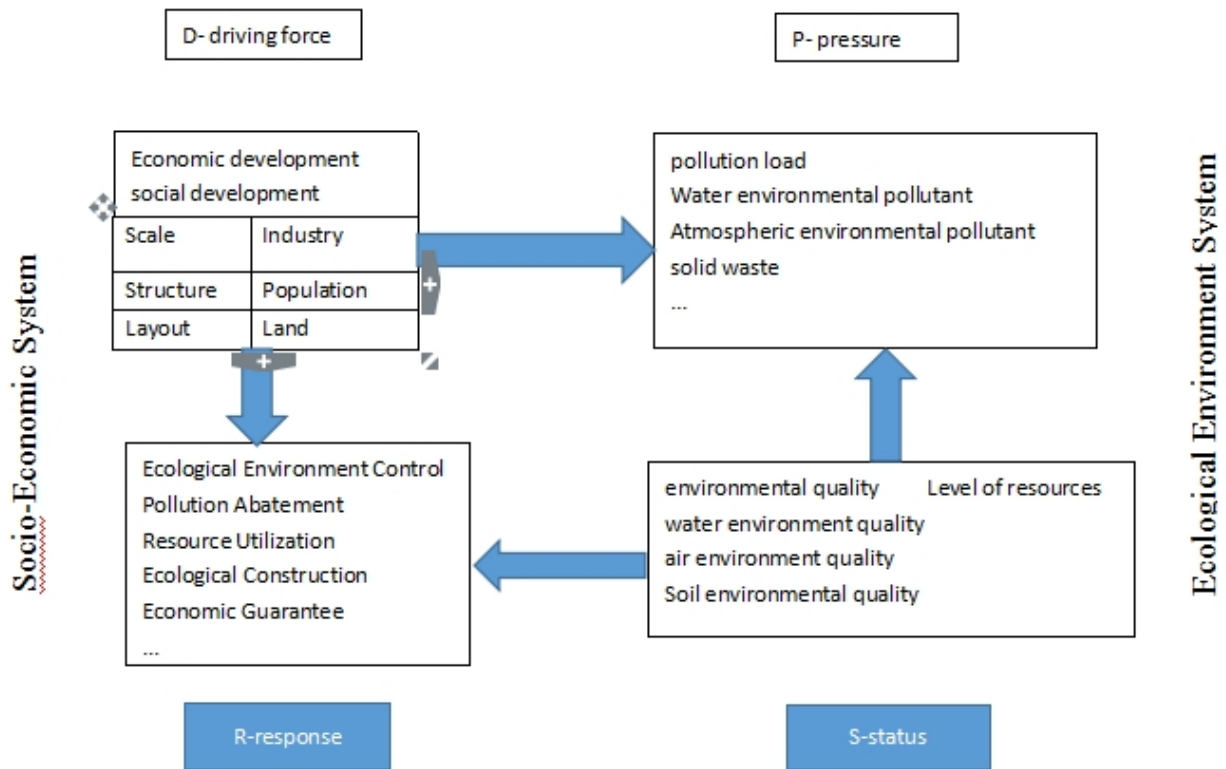


Figure 1 Schematic diagram of DPSIR framework

In order to better reflect the internal relationships in the DPSIR framework indicator system and to show better systematization and hierarchy, the entire system was analyzed for the hierarchy of the indicator system, as shown in Table 1.

Table 1 Hierarchical design of indicator system

Target layer	Domain layer	Theme layer	Feature layer	Indicator properties
Sustainable development of ecological environment	Economic growth (D)	scale	Economic, Society	Driving force
		structure	Industry, land	Driving force
		layout	Industry, population	Driving force
	Ecological impact (PS)	Pollution	Water environment, atmosphere, solid	Pressure
		Consume	Water, energy	Status
		quality	Atmospheric environment, soil environment	Status
		Governance	Atmospheric environment, water environment	Status
	Ecological	Resources	Water	Corresponding

environment regulation (R)	resources, solid waste
Build	Ecological land Corresponding

2. The Strategic Significance of Developing Circular Economy In Guiyang.

Today, the circular economy is booming, and low-carbon life has attracted people's attention. The green economy with the goal of harmonious economic and environmental development has become a new trend in this era. Building an ecological civilization is related to people's lives and is closely related to the future of the nation. Circular economy, as a new model for building ecological civilization, can achieve a win-win situation for both economy and resources. Guiyang City is located in western China. Compared with other cities, Guiyang City has shortcomings in economy. Since the reform and opening up, Guiyang City's economy has grown rapidly, but the way the city has been developing has been relatively extensive. Certain ecological destruction problems, which affect the sustainable development of cities. Therefore, in response to some difficult-to-repair ecological problems, Guiyang City adopted a circular economy development method to ensure the balance of the ecological environment while pursuing rapid economic growth. Although Guiyang is rich in natural resources, its ecological environment is lacking. In order to improve the overall appearance of Guiyang City, we must not only look at the immediate situation. We must pay attention to ecological benefits, use ecological benefits as the basis for development, put an end to the development path of pollution and post-treatment, and find new development models that can help Guiyang City to adjust its economy structure faster, optimize industrial layout, and improve economic growth. For Guiyang City, the change of urban development mode can help Guiyang City to improve the overall competitiveness of the city, and it has very important guiding significance for the development of circular economy in Guiyang.

3. Construction of Guiyang City's Metric Region Circular Economy Development Index System

3.1 Guiding Principles

Circular economy, as a development concept based on resource induction, principle of reduction and reuse, and featuring low consumption, is an overthrow of the traditional growth model. At present, the development significance and actual needs of the circular economy have been affirmed by many people, but there is still a certain deviation in specific cognition. The development of the circular economy requires a clear target and measurement system. This system does not only reflect the development of circular economy, it is also an important criterion for testing whether the circular economy meets the development needs. It can promote the development of circular economy in cities and allow cities to choose a circular economy path that suits them. The following principles should be fully considered in the development of regional circular economy:

Adhere to the development requirements of developing countries; take the economy-environment as a synthesis; consider whether the urban characteristics meet the development requirements; and choose the indicator variables.

The measurement of regional circular economy development needs the support of the DPSR working framework so that a large amount of data information can be integrated. Borrow the DPSR framework to analyze activities such as population growth and personal needs, so that human activities can generate driving forces and pressure the environment through human activities, thereby ensuring that the quality of the environment and the amount of natural resources can be constantly changing. . To generate social response through awareness and action is the purpose of the DPSR framework. Taking human activities into account can make processes and forms more influential.

3.2 System Construction

3.2.1 Index Selection

Guiyang City selects indicators based on the overall construction of the circular economy, as shown in Table 2.

Table 2 Selection of overall planning indicators for circular economy in Guiyang

Index	Unit	
Driving Force Index	DP per capita	Yuan / person
	Industry increases value	%
	Circular economy system	%
	Total imports and exports	%
	Population growth rate	%
	The level of urbanization	%
	unemployment rate	%
Separation index	Water productivity	Ten thousand yuan / m ³
	Energy productivity	Ten thousand yuan/t
	Material resource productivity	Ten thousand yuan/t
	Land resource productivity	Ten thousand yuan/km ²

3.2.2 Development Mode

According to Guiyang's previous work methods, Guiyang's economic growth and resource consumption are massive, and there is a large pollution to the environment, which is mainly characterized by high pollution and high resources. If Guiyang City continues to develop in this way, the lack of economic growth and pollution control will have an inestimable impact on the ecological environment. During the development of Guiyang, population growth was slow. In recent years, Guiyang's GDP has grown steadily, and resources have grown rapidly, as shown in Figure 2.

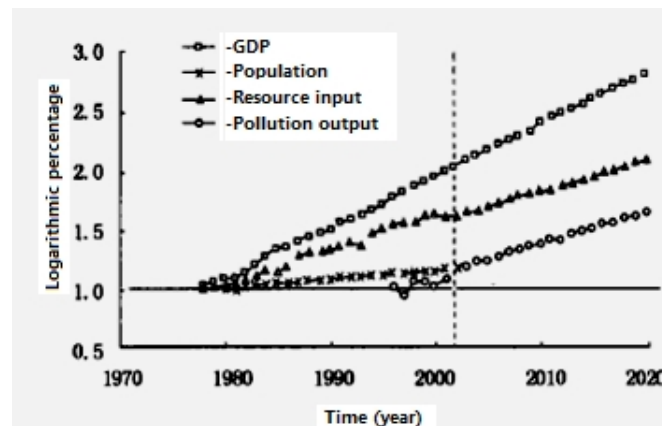


Figure 2 Growth curve of resources in Guiyang

According to the current development model of Guiyang City, the future development model is evaluated and predicted. The pressure indicators include total water consumption, energy consumption, wastewater, exhaust gas, and total emissions in industry. Corresponding indicators are emissions of water resources, energy, material resources, land and other resources.

According to the forecast, the separation of the stress indicators of the circular economy planning and GDP of Guiyang is good, and the selected stress indicators have been separated. The absolute separation of water resources compared with the overall material resources has occurred. Industrial solid waste has risen first and then declined, and the remaining indicators have shown a relatively stable separation. With the growth of GDP, the development of the speed is gradually increasing slowly. By 2020, the indicators set in Guiyang's circular economy plan will show an upward trend, as shown in Figure 3, which shows that Guiyang City adopts a circular economy approach. It is a very wise choice, which can make Guiyang's development road more stable.

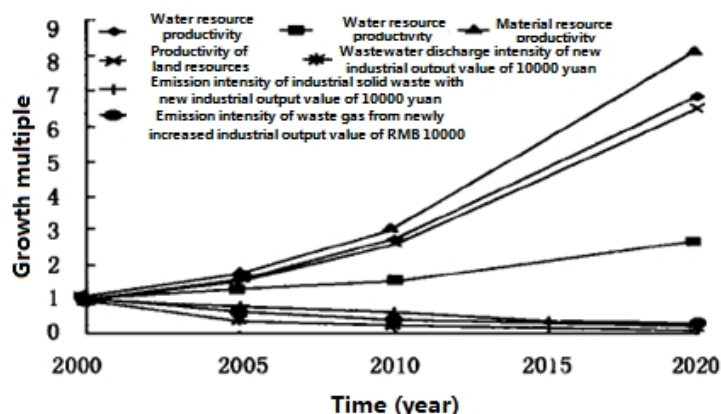


Figure 3 Future Forecast of the Separation Index of Circular Economy in Guiyang.

The design of the pressure indicators of Guiyang City follows the laws of social and economic development, and based on the actual development of Guiyang, analyzes the reasons for the increase in total energy consumption and waste emissions: According to Guiyang's per capita demand, the demand for energy is larger, and the total water consumption can remain unchanged, but the continuous increase in people's domestic water consumption makes the total discharge of material consumption continue to grow. Guiyang City has adjusted the import and export policies in response to this situation.

The path of development has been improved in time, so that Guiyang's economic expansion can survive in a development space with more resources. Therefore, in the future plan, in order for Guiyang City to obtain sustainable circular progress, it is necessary to use a circular economy to build an ecological city, seize the opportunity, change the development model, and promote urban growth.

Concluding Remarks

Guiyang City has formulated a strategic goal to increase GDP in order to build a well-off society in an all-round way to accelerate the process of Guizhou Province's comprehensive progress towards a wealthier society. As an inland city in the west of China, Guiyang City lacks economic development. To achieve a well-off society in an all-round way is a long-term development strategy. Using a circular economy approach, Guiyang has explored a mental model that belongs to Guiyang's urban development. It allows economic growth while balancing the ecological environment. Circular economy approach is a very important guiding role for Guiyang.

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