

Research on the Mechanism and Realization Path of Ecological Economy Promoting Urban High Quality Development Taking Kunming as an Example

Xinyang Li¹, Jin Chen^{2,*}

¹ School of Economics, Anhui University of Finance and Economics, Bengbu, China

² School of Accountancy, Anhui University of Finance and Economics, Bengbu, China

*Corresponding Author: 120080997@aufe.edu.cn

ABSTRACT

The report of the 20th National Congress of the Communist Party of China stressed that "Chinese style modernization is the modernization of harmonious coexistence between man and nature", pointing out the direction for the construction of ecological civilization. As a lakeside city on the plateau, Kunming has become a typical representative of green development by virtue of its ecological advantages of "surrounding the city with mountains and surrounding the city with water". Taking Kunming as an example, combined with the ecological location advantages of Kunming, this study analyzes the impact of biodiversity measures on the urban ecological economy, analyzes the current situation and existing problems of its ecological economy development, uses factor analysis method to explore the important influencing factors on the coordinated development level of ecology and economy in Kunming, and puts forward policy suggestions from the aspects of system innovation, industrial transformation, ecological compensation, etc., in order to put forward new ideas and methods for the construction of urban ecological economy in the new era and the sustainable development of green cities.

KEYWORDS

Ecological economy; Environmental governance; Socialist modernization; Ecological Civilization

1. INTRODUCTION

General Secretary Xi Jinping pointed out that a good ecological environment is a valuable asset of the country and must be protected from generation to generation. As the national famous "flower capital", Kunming has unique ecological and environmental advantages. How to grasp the dialectical relationship between "green water and green mountains" and "golden mountains and silver mountains", combine ecological governance with the development of characteristic industries, and walk out of a path of coordinated development of ecology and economy, and harmonious coexistence between man and nature has become an important issue for the development of Kunming. General Secretary Xi made a profound analysis of the root causes of China's ecological and environmental problems, pointed out that "the ecological and environmental problems are in the final analysis the problem of economic development mode", and proposed to improve the relationship between human economic activities and natural ecological environment through the transformation of development mode.

Taking tourism cities such as Kunming as an example, the urban economy mainly depends on local tourism, and the ecological environment will have a huge impact on the development of various

economies. Improving the construction of ecological civilization in Kunming is not only the need of urban economic development, but also the need of people for a better life.

At the National Conference on ecological and environmental protection, General Secretary Xi Jinping repeatedly stressed that ecological and environmental protection and economic development are dialectical unity and complementary. Building ecological civilization and promoting green low-carbon circular development can not only meet the people's growing needs for a beautiful ecological environment, but also promote the realization of higher quality, more efficient, fairer, more sustainable and safer development, and walk out of a civilized development path of production development, rich life and good ecology. In December, 2024, the general plan of land and space of Kunming was approved by the State Council. The document clearly proposed that Kunming should build a spatial system for the overall protection of cultural resources, natural resources and landscape resources, highlighting the characteristics of the beautiful spring city and the plateau lakeside city.

Based on the new concept of green development, this project will actively respond to the call of the national ecological civilization construction, improve the concept of Kunming's urban ecological development from the perspective of mechanism and implementation path, and promote the green transformation of Kunming's urban development with the concept of "new quality productivity itself is green productivity".

2. MECHANISM OF ECOLOGICAL ECONOMY HELPING KUNMING ACHIEVE HIGH QUALITY DEVELOPMENT

The development of green ecological economy and the high-quality development of Kunming city are dialectical unity. There is a mechanism of mutual promotion, coordination and symbiosis between the two systems. On the one hand, ecological protection plays a supporting role in high-quality urban development. The specific performance is as follows: first, ecological environment protection is the premise of high-quality urban development. The carrying capacity of regional resources and environment can directly define the agglomeration scale of population and industry, and the change of ecological environment can directly affect the rise and fall of civilization. Second, the concept of ecological economy can continuously promote the green transformation of urban development. The high-quality development of urban economy requires a resource-saving and environment-friendly way to achieve sustainable development. Green development is the proper meaning of high-quality urban development. Third, the ecological economy enables the high-quality development and value-added of cities. Cities should adjust measures to local conditions, fully rely on their own ecological resource advantages, actively explore the feasible path of ecological industrialization, and promote the realization of the value of ecological products, which is conducive to enabling the high-quality development and value-added of urban economy. On the contrary, if the urban development does not pay attention to ecological protection and sacrifices the interests of the people for short-term economic growth, the ecological environment will be destroyed, which will restrict the improvement of high-quality economic development. On the other hand, high-quality urban development promotes the ecological economy. Specifically, first, high-quality economic development is driven by innovation. Technological progress and innovation will greatly improve the economic structure and efficiency, provide technical support for the development of ecological economy, achieve high output of resource utilization, high efficiency of pollution control, and high supply of ecological services, so as to improve the level of ecological protection. Second, the overall coordination of regional, urban and rural and industrial development is conducive to enhancing the coordination and linkage of ecological protection, so as to promote the overall improvement of the level of ecological economy. Third, high-quality urban development will improve the welfare level of the whole society, improve people's livelihood, and promote the formation of people's ecological ethics, so as to improve their awareness of environmental protection, increase the effective demand for ecological products, and ultimately achieve the purpose of ecological protection. On the contrary, if we pursue the extensive

economic development mode of high pollution, high energy consumption and high emissions, it will inevitably lead to resource depletion, ecological deterioration and other consequences, which will have a threatening effect on ecological protection.

3. ANALYSIS ON THE CURRENT SITUATION OF KUNMING'S ECOLOGICAL ECONOMY HELPING URBAN DEVELOPMENT

"Beautiful mountains and rivers, pleasant and livable" is a synonym for Kunming's urban development. In recent years, Kunming has successively won the first place in the world spring city and the gold award of UN Habitat International Garden City. The ecological advantage of spring city is one of the important development advantages of Kunming. On June 1st, 2023, Kunming Municipal Bureau of ecological environment issued the bulletin of ecological environment of Kunming in 2022. The communique shows that the overall ecological environment quality of Kunming remains stable, and the "Spring City" brand has become the most core, characteristic and competitive element in the high-quality development of Kunming.

3.1. Ecological Governance

Kunming has achieved remarkable improvement in the ecological environment of Dianchi Lake through systematic and scientific comprehensive management measures. As the first of the nine plateau lakes in Yunnan, the water quality of Dianchi Lake has increased from worse than Class V in the 1990s to class IV for seven consecutive years. The construction of the ecological belt around the lake has achieved remarkable results. The wetland vegetation coverage has increased from 13.1% to 81%, and the number of plant species has increased to 303. The population of native fish in Dianchi Lake has gradually recovered, and the number of bird species has increased from 89 to 175, including more than 9 species of rare and protected birds at the national level. This achievement benefits from the systematic governance strategy of "source control and pollution interception, precise prevention and control, scientific water supplement, ecological greening, and scientific and technological support", as well as the continuous strengthening of biodiversity protection after the COP15 meeting. The treatment of Dianchi Lake not only restored the function of lakeside ecosystem, but also became a model to show the achievements of China's ecological civilization construction, providing an important reference for the ecological restoration of Plateau Lake cities.

3.2. Industrial Transformation

Kunming has deeply practiced the development concept of "industrial ecology and Ecological Industrialization" and built a diversified green industrial system. The upgrading of traditional agriculture to green and organic is accelerated, and the brand effect of characteristic agricultural products such as "Dongchuan flowering potato" is significant; In the industrial sector, six national and provincial green industrial parks and 62 green factories have been built through actions to save energy, reduce carbon and improve efficiency, forming a relatively complete green manufacturing system; Strategic emerging industries are booming. Projects such as Yunnan Shanshan lithium battery anode material and Yunnan Yunneng lithium iron phosphate cathode material have been built into a global leading production base. Leading enterprises such as Yunnan Baiyao and betaine have emerged in the biomedical industry. It is particularly noteworthy that Kunming has transformed its ecological advantages into industrial advantages and promoted the coordinated development of green industries such as plateau featured agriculture, clean energy and ecotourism. In 2024, the proportion of the added value of strategic emerging industries in the city's GDP increased significantly, realizing a virtuous cycle of economic growth and ecological protection, and providing a model for the green transformation of resource-based cities.

3.3. Spatial Optimization

Guided by the general plan of land and space of Kunming, Kunming has created a new urban pattern of coordinated development of "three living spaces". Through the scientific delimitation of "three zones and three lines", the protection of Dianchi Lake is taken as the core constraint to promote the orderly release of industry and population to the lower reaches of the river basin, thus reserving an elastic space for the sustainable development of the city. In practice, Kunming has opened a total of 88 shared green spaces, covering an area of more than 1.26 million square meters, added and renovated more than 1000 parks, increased 206 hectares of urban green space, and achieved a forest coverage rate of more than 45%, forming a park city landscape system of "city in the Park, park in the city". This spatial reconstruction not only alleviates the ecological pressure of Dianchi Lake, but also connects urban and rural ecological resources through 108 km Dianchi greenway and other landmark projects, creating a three-dimensional landscape network of "moving landscape", realizing the organic integration of ecological space, living space and production space, and exploring a characteristic path for plateau lakeside cities that takes into account ecological protection and urban development.

3.4. Integration of Culture and Tourism

Relying on the results of ecological management of Dianchi Lake, Kunming has created a new integrated development mode of "ecology+culture+tourism". With the 108 kilometer Dianchi greenway as the link, Kunming has successfully connected 46 characteristic beautiful villages along the coast and 58 lakeside wetlands, building a cultural and tourism spatial pattern of "one village, one theme, one landscape and one feature". By planning and holding brand activities such as the national reading conference, Nie'Er music week, and developing immersion experience projects such as the "Grand View wonderful night" lighting show, Kunming has deeply integrated ecological resources and cultural creativity. The six golden tourism routes launched in 2024 organically integrate the diversified business forms such as intangible cultural heritage, cultural innovation and health care around Dianchi Lake, making the annual number of tourists received along the Dianchi Lake exceed 30 million, and the tourism revenue increased by 25% year-on-year. This development model, which takes ecology as the background, culture as the soul and tourism as the carrier, not only makes the "Plateau Pearl" glow, but also cultivates the "life in Yunnan" culture and tourism IP, and explores a sustainable industrial value-added path for ecological cities.

4. AN EMPIRICAL STUDY ON ECOLOGICAL ECONOMY HELPING KUNMING ACHIEVE HIGH QUALITY DEVELOPMENT

4.1. Measurement Method

Factor analysis is a statistical technique for extracting common factors from variable groups. It was first proposed by British psychologist C. Spearman. It is a special case of principal component analysis and was first applied to the study of student achievement. Factor analysis can find out the hidden representative factors in many variables. Classifying variables of the same nature into a factor can reduce the number of variables and test the hypothesis of the relationship between variables. In this paper, we can use factor analysis to analyze the obstacles of digital economy affecting agricultural development, and classify them into several categories to facilitate intuitive analysis.

4.1.1. Factor analysis steps

(1) Standardize the data

Convert each index value a_{ij} into standardized index $\tilde{a}_{ij}$, where

$$\mu_j = \frac{1}{n} \sum_{i=1}^n a_{ij}, S_j = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (a_{ij} - \mu_j)^2}, j=1,2,3 \dots m$$

That is, μ_j is the sample mean of the j -th index, and S_j is the sample standard deviation.

(2) Calculate the correlation coefficient matrix R

Correlation coefficient matrix $R = (r_{ij})_{j \times j}$, including:

$$r_{ij} = \frac{1}{n-1} \sum_{k=1}^n \tilde{a}_{ki} \tilde{a}_{kj}, i, j = 1, 2 \dots m$$

In this formula, r_{ij} is the correlation coefficient of the I and j indicators.

(3) Calculate eigenvalues and eigenvectors

Calculate the eigenvalue of the correlation coefficient matrix R and the corresponding normalized eigenvector $u_1, u_2 \dots u_j$, J new index variables composed of eigenvectors

[illegible]

Where, y_1 is the first factor... y_J is the j-th factor.

(4) Factor rotation and factor score

The purpose of establishing the mathematical model of factor analysis is not only to find out the common factors and group the variables, but also to know the meaning of each common factor, so as to scientifically analyze the actual problems. If the meaning of each common factor is unclear, it can be rotated according to the non uniqueness of the factor load matrix, in order to find a more accurate meaning. Factor analysis is usually divided into orthogonal rotation and oblique rotation. After the factor model is established, the properties of each sample and the relationship between samples can be investigated in turn. By calculating the value of each sample on each common factor, the samples can be classified according to the value of the factor, and the differences between each sample can be studied.

4.1.2. Analysis system construction

(1) System description

We classify the factors that affect the high-quality development of cities into the following four aspects: green technology and innovation, ecological environment governance and protection, ecological industry and green economic development, urban ecosystem and sustainable development policy. After the analysis category is determined, a quantitative analysis table is constructed to quantify the questionnaire results.

Table 1. Index quantification table

Dimension	Issue	Quantitative criteria	
Green technology and innovation	Is green building materials widely used in your city?	Yes, widely used	10
		Partial use	6
		Basically not used	2
		Not used at all	0
	What is the proportion of new energy sources (such as solar energy and wind energy) in your city?	More than 50%	10
		30%-50%	6
		Less than 30%	2
		No new energy use	0
	What do you think of the city's support for green technology innovation?	Very supportive	10
		favour	6
		ordinary	4
		Not Supported	0
	What is the application degree of your city in intelligent transportation, smart grid and other fields?	Height application	10
		Partial application	6
		Rarely used	2
		No application	0
Ecological environment management and protection	What measures have your city taken in air pollution control?	Strong measures	10
		Certain measures	6
		Few measures	2
		No measures	0
	Does your city implement effective water resources protection measures?	exist	10
		Partial	6
		nothing	0
	What is the implementation of waste classification and recycling in your city?	Fully implemented	10
		Partial implementation	6
		Rarely implemented	2
		No implementation	0
	Is there a special biodiversity conservation project in your city?	There are multiple projects	10
		There is a project	6
		Few projects	2
		No project	0
Ecological industry and green economy development	How developed are the green industries (such as green manufacturing and environmental protection industries) in your city?	Very fast	10
		Rapid development	6
		Slow development	2
		No development	0
	In your city, how many employment opportunities are provided by the green economy (such as new energy, environmental protection and other fields)?	a lot of	10
		certain quantity	6
		a fat lot	2
		No job opportunities	0
	Does your city have green financial policies or investment to support green industries?	exist	10
		Partial	6
		nothing	0
	What is the consumption tendency of residents in your city towards green products (such as organic food, green building materials, etc.)?	High inclination	10
		Have a certain tendency	6
		Lower tendency	2
		No tendency	0
Urban ecosystem and sustainable development policy	Has your city formulated and implemented a clear sustainable development policy?	Full execution	10
		Partial execution	6
		Less enforcement	2
		No execution	0
	What do you think of the measures taken by the city to protect the ecosystem (such as green space, water bodies, etc.)?	Very effective	10
		Must be effective	6
		Poor effect	2
		invalid	0
	What is the environmental awareness of urban residents?	Extremely high	10
		higher	6
		ordinary	4
		insufficient	0
	What do you think of the city's education and publicity work in promoting sustainable development?	Well done	10
		Have a certain job	6
		Less work	2
		No work	0

(2) Index quantification table

The survey team took the ten point scale as the standard for quantification this time. For the questionnaire questions measuring willingness, the three answer options were 10, 6, and 2 points from high to low, and the four answer options were 10, 6, 4, and 0 points from high to low; For the questionnaire questions measuring the degree, the three answer options are 10, 6, and 2 points from high to low according to the degree, and the four answers are 10, 6, 4, and 2 points from high to low according to the degree; For multiple measurement topics, it is also quantified in the form of giving 2 points to the right one. The more options selected, the more points will be given. The specific quantitative processing of questionnaire questions corresponding to each variable is as follows.

4.2. Analysis of Measurement Results

4.2.1. KMO inspection

The larger the KMO value, the more common factors among variables, and the more suitable for factor analysis. The validity was evaluated according to the commonly used metrics, and the value of KMO was above 0.9, indicating that it was very suitable for factor analysis; 0.8-0.9 description is appropriate; 0.7-0.8 is appropriate; 0.6-0.7 is acceptable. Principal component analysis can be applied only when KMO value exceeds or approaches 0.6. Using Stata for analysis, the KMO result is 0.754 as shown in the table below, indicating that there is the possibility of shared factors between variables, so factor analysis can be carried out.

Table 2. KMO inspection form

variable	Initial correlation	Deviation variance	Partial KMO value
X1	0.753	0.204	0.746
X2	0.621	0.231	0.712
X3	0.742	0.195	0.76
X4	0.697	0.213	0.734
X5	0.677	0.224	0.715
X6	0.729	0.208	0.751
X7	0.651	0.21	0.72
X8	0.72	0.202	0.73
X9	0.687	0.211	0.725
X10	0.739	0.205	0.749
X11	0.71	0.215	0.728
X12	0.765	0.198	0.759
Overall value: 0.754			

4.2.2. Factor analysis

Using Stata software for factor analysis, the results are shown in the table below.

Table 3. Factor analysis results

factor	eigenvalue	Variance percentage	Cumulative percentage
Factor 1	3.965	32.05%	32.05%
Factor 2	2.712	22.57%	54.61%
Factor 3	1.823	15.19%	69.80%
Factor 4	1.263	10.53%	80.33%
Factor 5	0.98	8.17%	88.49%
Factor 6	0.752	6.27%	94.76%
Factor 7	0.586	4.89%	99.65%

Principal component analysis selects four principal components, with contribution rates of 32.05% for the first principal component, 22.56% for the second principal component, 15.19% for the third principal component, 10.53% for the fourth principal component, and a cumulative contribution rate of 80.33%. This means that the four factors cover 80.33% of the data information for the 12 factor analysis evaluation indicators.

4.2.3. Factor rotation and conclusion

Using the method of maximum variance to rotate the factors, the following four factor components are obtained:

Table 4. Factor composition table

	Factor 1	Factor 2	Factor 3	Factor 4
Application of green technology	0.803	0.125	0.215	0.103
New energy use	0.755	0.32	0.213	0.072
Technical innovation support	0.678	0.291	0.31	0.195
Technology innovation intelligent transportation application	0.71	0.186	0.425	0.186
Pollution control measures	0.115	0.821	0.282	0.112
water resources protection	0.134	0.803	0.285	0.22
Garbage classification and recycling	0.062	0.748	0.342	0.263
Biodiversity conservation	0.112	0.835	0.292	0.105
Green industry development	0.162	0.212	0.794	0.225
Green jobs	0.26	0.381	0.715	0.268
Green finance policy support	0.318	0.215	0.705	0.156
Green consumption tendency	0.415	0.128	0.642	0.453
Sustainable development policy implementation	0.301	0.326	0.235	0.705
Ecosystem protection measures	0.265	0.189	0.132	0.748
Residents' awareness of environmental protection	0.309	0.41	0.308	0.711
Education and publicity of sustainable development	0.245	0.318	0.317	0.731

According to the load of each factor in the composition matrix table, it can be clearly seen that the most important factor affecting the high-quality development level of Kunming city's ecological economy is the application of green technology. The first factor has the highest load on the application of green technology and the use of new energy, so it can be named the "technological innovation factor". Generally speaking, green technology innovation can not only optimize urban infrastructure, but also improve residents' quality of life and happiness index. By promoting the widespread application of technologies such as green buildings, new energy applications, and intelligent transportation, the resource utilization efficiency and environmental quality of cities can be significantly improved. These innovations have promoted the optimization of energy structure, reduction of carbon emissions, and intelligence of transportation systems, thereby enhancing the sustainable development capacity of cities and promoting the realization of high-quality development. The second factor is mainly loaded on pollution control measures, water resource protection, and biodiversity conservation. Ecological environment protection has improved the environmental quality and ecosystem stability of cities by strengthening pollution control, water resource protection, garbage classification, and biodiversity conservation. These measures have reduced environmental pollution and resource waste, created a healthier living environment for residents, and promoted the development of a green economy.

At the same time, a good ecological environment attracts more investment and talent, enhances the sustainable development capacity of cities, and promotes the achievement of high-quality development goals. Therefore, the second factor can be named "ecological factor". The third factor load is in green industries, green employment, and green finance. The green industry economy promotes the efficient utilization of resources and the growth of low-carbon economy by promoting the development of green manufacturing, environmental protection industry, and green employment. These industries not only reduce environmental pollution, but also create a large number of job opportunities and promote sustainable economic development. Therefore, the third factor can be named "industry factor". The fourth factor load lies in sustainable development policies, environmental awareness, and sustainable development education. By promoting sustainable development policies, strengthening ecological protection measures, and enhancing residents' environmental awareness, the government has facilitated the green transformation of cities and the overall sustainable development of society. Effective policy implementation ensures the improvement of the ecological environment and the rational utilization of resources. At the same time, residents' awareness of environmental protection has strengthened their practical actions towards green consumption and environmental protection. Therefore, the fourth factor can be named the "policy awareness factor".

Therefore, the formula for calculating the scores of each factor can be derived as follows:

$$f = 0.3205f_1 + 0.2256f_2 + 0.1519f_3 + 0.1053f_4$$

The importance levels of the four factors obtained through in-depth data analysis are as follows: technological innovation factor >> ecological factor >> industry factor > policy awareness factor.

From the perspective of the main factor, the technological innovation factor is the most important among all influencing factors. Green technology innovation not only improves the energy efficiency of cities and reduces resource waste, but also promotes low-carbon and environmentally friendly production and lifestyle. For example, the application of new energy technologies can reduce reliance on traditional energy sources, decrease carbon emissions, and help cities achieve green development goals. At the same time, the application of technologies such as intelligent transportation and smart grid has made urban infrastructure more efficient and intelligent, improving the quality of life of residents. In addition, technological innovation provides impetus for optimizing industrial structure and economic transformation, promoting the rapid development of green economy and innovation driven economy. Through technological innovation, cities can achieve economic growth and sustainable high-quality development while protecting the environment. The importance of ecological factors is second only to technological innovation factors, as the sustainability of the ecological environment directly affects the long-term development potential of cities. A good ecological environment provides basic living conditions for cities, such as clean air, sufficient water resources, and stable ecosystems, which directly affect the health and quality of life of residents. Ecological protection not only helps reduce pollution and address climate change, but also provides support for the development of green industries. In addition, ecological factors can promote sustainable urban planning and resource utilization, ensuring that economic growth and environmental protection go hand in hand. With the deepening global attention to environmental issues, ecological factors have become a core component of urban development, promoting the transformation of cities towards green, low-carbon, and efficient directions. As the third public factor, industrial factors will directly affect the economic structure, employment opportunities, and resource allocation of cities. The development of green industries, such as environmental protection, new energy manufacturing, and green buildings, not only promotes urban economic growth, but also achieves a win-win situation between environmental protection and economic benefits. Through green industries, cities can create high-quality employment opportunities while reducing carbon emissions, promoting sustainable economic transformation. The support of green finance provides

necessary financial support for these industries and promotes the promotion of green technologies and products. The development of industrial factors can inject innovative vitality into cities, enhance industrial competitiveness, optimize economic structure, and maintain a leading position in global economic competition. In terms of policy awareness factors, effective policy support provides legal and financial support for the green development of cities. By formulating and implementing sustainable development policies, the government can guide social resources to tilt towards green industries and environmental protection. At the same time, the increase in social awareness encourages citizens to actively participate in environmental protection actions, promote green consumption and resource conservation, and form a virtuous cycle. The implementation of policies and the strengthening of social awareness can help create a favorable social environment for technological innovation and green industries, deeply embed the concepts of environmental protection and sustainable development, and promote the coordinated development of urban economy, environment, and society.

5. CONCLUSIONS AND SUGGESTIONS

5.1. Conclusion

This article constructs evaluation indicators for high-quality economic development and ecological environment quality based on data from the Ecological Statistical Yearbook. Factor analysis is used to study the important influencing factors of ecological economy on the high-quality development of Kunming city. The main research conclusions are as follows:

Technological innovation is the core driving force for high-quality urban development. By promoting the application of green technologies such as new energy, intelligent transportation, and smart grids, cities can improve resource utilization efficiency, reduce environmental burdens, and promote the coordinated development of economy and ecology. Technological innovation can not only enhance the intelligence and greening of urban infrastructure construction, but also promote industrial transformation and help cities achieve sustainable and efficient growth.

Ecological protection and green industry complement each other, promoting sustainable development: ecological and industrial factors work together to ensure that cities protect the environment while achieving economic growth. The improvement of the ecological environment provides development space for green industries, which in turn promote the green transformation of the economy through innovation and environmental protection projects. The support of government policies and public environmental awareness are also crucial, as they create a favorable external environment for technological innovation and industrial development.

5.2. Suggestions

5.2.1. Strengthen support for technological innovation and promote the research and application of green technologies

Technological innovation is the core factor driving high-quality urban development, and the government should increase its support for green technology and innovation. This includes investment in research and development of green technologies such as new energy, intelligent transportation, and smart grids, encouraging companies to make technological breakthroughs in the field of green innovation, and providing policy support such as tax reductions and R&D subsidies. By collaborating with research institutions, universities, and enterprises, we aim to create a green innovation ecosystem, promote the widespread application of technology in various fields of the city, and enhance the sustainable development level of the city. Especially in the fields of urban infrastructure construction, transportation, and construction, the promotion of green technologies will

help reduce environmental pollution, improve resource utilization efficiency, and promote the construction of low-carbon cities.

5.2.2. Strengthen ecological and environmental protection policies and promote green transformation

Ecological and environmental protection is a necessary prerequisite for the development of ecological economy. First, we need to formulate and implement strict environmental pollution control measures, such as air pollution, water resources protection, waste recycling, etc., to promote the application of low-carbon and environmental protection technologies. Secondly, through green development planning, enterprises can be encouraged to carry out green transformation and industrial structure adjustment to promote the transformation of traditional industries to green and low-carbon direction. In addition, the government should strengthen ecosystem protection, optimize the layout of urban green space, implement the ecological compensation mechanism, and enhance the ecological carrying capacity of the city. In order to further improve the environmental awareness of society, we should strengthen environmental protection education and publicity, encourage residents to participate in ecological protection actions, and form the whole society to jointly promote green development.

5.2.3. Promote the development of green industry and promote the combination of green economy and green finance

Green industry is an important support for high-quality urban development. Policies should encourage and support the development of green industry and promote the green transformation of economic structure. Preferential policies can be formulated to support green enterprises and green projects, especially in the fields of green building, environmental protection technology, renewable energy, green transportation, etc., to provide financing, tax and other support. At the same time, we should promote the development of green finance, provide sufficient financial support for green industries through green bonds, green funds and other financial instruments, and attract more social capital to participate in the construction of green projects. We should also strengthen cooperation with the international green economy, learn from advanced green industry experience, and guide the development of urban green industry to a higher level.

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