Urban Planning and Design Based on the Concept of Ecological City

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Abstract. Under the call of a resource-conserving and environment-friendly society, urban ecological civilization construction has the same status as economic construction, political construction, cultural construction, and social construction, which has led to the transformation of urban planning and design ideas in China. In view of the grim situation of current resource shortage, serious environmental pollution and degraded ecosystem, it is extremely urgent to integrate ecological civilization construction into urban planning. Based on this, the thesis will carry out urban planning and design under the concept of eco-city. It is hoped that the article can be used together with the scholars to discuss the relationship between ecological connotation, eco-city and ecological aesthetics, and the construction of eco-city planning index system for eco-city planning. Construction advice and suggestions.

1. Introduction
In the report of the 18th National Congress of the Communist Party of China, the first part of the report discusses ecological civilization, puts the construction of "ecological civilization" in a prominent position, and proposes to establish the concept of ecological civilization that respects nature, conforms to nature, and protects nature, and strives to build a beautiful China and realize the Chinese nation. Sustainable development. This requires urban planners to understand the concept of "ecology" more deeply, starting from the ecological status quo of China, and exploring the path of realizing "ecological civilization" society through the practice of eco-city planning.

How to reduce the impact and damage to the natural environment, maximize resources, and build the progress of human civilization on the basis of harmonious coexistence with the natural environment, and obtain more environmental comfort with less energy and material costs. For cities with more complex and varied ecological environment, complex terrain, geological instability, climate change, and fragile animal and plant ecological environment, how to integrate ecological planning into urban planning and design is a topic worth exploring.

2. The birth and development of the concept of ecological environment

2.1. Ecological planning
The ecological planning can be traced back to the end of the century. The planning practice of ecologists and planners represented by Marsh, Powell and Geddes marks the creation of ecological
planning [1]. American ecologist Mike Hagg, in the book Design and Nature, pointed out that ecological planning is the planning of a certain use of land without any harmful conditions or in the majority of harmless conditions [2]. Chinese scholar Wang Rusong believes that the essence of ecological planning is to use ecological principles and ecological economics to regulate the ecological relationships among various subsystems and their components in a complex ecosystem, to coordinate the relationship between resource development and other human activities and natural environment and resource performance. To achieve sustainable development of urban, rural and regional social and economic [3], as shown in Figure 1. Yu Zhixi believes that ecological planning is the dynamic balance of the ecosystem and a planning method for regulating the relationship between people and the environment. Quanchuan believes that the broad-based ecological planning is used as a methodology to guide other highly operational planning, making it a plan that runs through the principles of ecology. A narrowly defined ecological plan is a plan at the ecosystem level. From qualitative description and analysis to quantitative simulation, it becomes an implementable countermeasure planning [4].

Figure 1. Urban ecological planning concept.

2.2. Eco-city content and guidelines
The eco-city was originally a typical composite system, which comprehensively studied the factors involved in the city, including urban layout, infrastructure and various environments, and can use energy, resources and current big data reasonably and efficiently. It can also effectively guarantee the harmony and unification of the environment, society and finance. It is mainly reflected in the following points: First, the system itself has the characteristics of efficient operation, and realizes economic resources in the whole process of investment and output. Output is greater than natural resource inputs, while ensuring that waste emissions are effectively reduced, and the industrial system is an inverted pyramid system. Secondly, this system has the characteristics of high-quality operation. It can regard modern infrastructure equipment as support, and rely on people, things, information, value and energy flow to reduce economic losses and effectively protect the environment. Finally, with significant holistic and systematic, it not only protects the environment, but also promotes the development of the urban economy [5]. Although the green block cannot be regarded as the core goal of the construction of the eco-city, the focus is on the economy and the environment. Coordinated, the level of concern is the improvement of our quality of life, and will not affect sustainable development because of the immediate development. The construction of an ecological city must be based on the fundamentals of natural ecology, and then the creation of science, the maintenance and development of common development, and thus the ecological benefits will be significantly improved.
3. Urban planning and design ideas based on the concept of ecological city

3.1. Ecological survey and evaluation
The basic work of urban planning to carry out ecological special research is often based on land suitability evaluation, carrying out special investigations in the field, in-depth contact with the ecological status quo, and gaining experience in ecological issues. The field survey includes the ecological status of the river system, the implementation status of some ecological concepts in the planning drawings, and the expansion of urban construction land. Through ecological investigation and research, it has an intuitive and realistic understanding of the ecological problems of urban and rural development. Combined with certain ecological analysis techniques, it comprehensively evaluates the ecological status of the research area, identifies major ecological problems, and provides effective technical support for the target development strategy.

3.2. Ecologically oriented planning target selection
In the process of urban planning, researchers need to implement the requirements of ecological and low-carbon development, and scientifically select the development goals of the city as a guide to the importance of urban development. Specifically divided into the following major aspects: First, the appropriate population size and growth rate; Second, reasonable land use; Third, efficient economic development; Fourth, healthy social development; Fifth, a pleasant living environment; Sixth, convenient traffic communication; Seventh, thrift resource consumption; Eighth, clean air water; Ninth, perfect historical protection; Tenth, a safe defense system; Eleventh, coordinated urban and rural development. The ideal Chinese city in the 21st century should be a coordinated development of economy, society and environment. A city with sustainable development, a high-efficiency and high-efficiency city based on high and new technology, a livable city with a pleasant living environment, and a high cultural quality. Civilized city [6].

3.3. Ecological analysis of planning implementation assessment
Based on the research method of improving urban planning under the guidance of eco-city concept, it is necessary to strengthen the relevant aspects of ecological analysis in all aspects of planning and implementation assessment, which is embodied in the study of urban ecological development target system, ecological space protection and foundation. Tracking progress in facilities construction, social development and urban industrial restructuring. Through ecological analysis, supervise and monitor the fit between the established ecological planning results and the actual conditions, and the rationality of the scientific and specific implementation effects in the implementation process, timely control the urban and rural ecological development trends, and timely adjust the specific measures and measures.
implemented in the planning, so that Promote the improvement of the level of urban and rural planning system construction.

4. Example analysis

4.1. Green around the city of Yibin
The modern urbanization process has forced the city to continue to expand. Due to the lack of contiguous land for construction, the city can only cross the valley and the complex terrain, and there is a "band-like group" layout; when the distance between the two ends of the "band-shaped group" city exceeds a certain limit, due to the internal relationship of the group and The sharp decline in compactness will lead to a decrease in the efficiency of various urban systems. To continue to expand the scale of the ribbon city, it is necessary to adjust the development ideas, to develop deep into the mountains or across the river, and return to the compactness of the group; after the city realizes cross-river development, successively Over the ridges, rivers, valleys and valleys, the leaps and bounds seek development space, forming a "multi-center group structure." At the beginning of the development, the urban groups are more closely distributed in the adjacent terrain. The group consists of "green corridor" and "green deed" composed of mountains, water bodies and forests. With the further expansion of the land, it will be Urban areas across the river or across the mountain are included in the scope of urban development, and there are enclave groups that span large-scale landscape restrictions, thus integrating a larger range of natural landscape space into the urban ecological space structure, forming a large-scale mountain and water system as the skeleton. Green branch type ecological space structure, such as Yibin City [7].

The national historical and cultural city of Yibin, Sichuan, the old city of Sanjiangkou is located on the peninsula of the Yangtze River where the Minjiang River and the Jinsha River meet. The north, east and south faces the Lancang River, the Yangtze River and the Jinsha River, the west is Cuiping Mountain, and the north are the Cui Ke Mountain and Dong Mountain, the east is Qixing Mountain, the overall ecological space pattern of "mountain surrounded by mountains and three rivers around the river". The ecological spatial structure of the center of Yibin is "Jiangshan City Field, One Heart, Three Belts and Four Wedges". The Yangtze River, the Lancang River, the Jinsha River and the green areas along the river constitute a city-level green corridor. Each parallel veined mountain and other peripheral forest green spaces are inserted into a group-level green corridor, which together constitute the urban ecological spatial structure of Yibin and provide good services for the city. The environment and the function of ecological services limit the urban spatial structure and development direction. As shown in Fig.3, it is a modern urban planning map of Yibin.

![Figure 3. Yibin City Development Planning Trends.](image)

4.2. Panzhihua of Green Branch Eco City
Under the guidance of the socialist functional zoning theory and the construction policy of "not building a concentrated city", “reliance on mountains, decentralization, concealment”, "first production, and later life", the "three-line construction" in the planned economy period will be accompanied by the
construction of industrial bases to drive warehousing, living, and transportation expand outwards, forming a group of scattered group-type cities. Due to the scattered construction of such cities, the scale of ecological land in the urban area is large, but the system is not obvious. The mountains, water systems and cities interspersed with each other. The large-scale mountain and water system with veins are the skeleton, and each group is based on the trend of mountains and rivers. The point distribution is scattered between the mountains and rivers to form a "green branch" type of ecological space structure. Take Panzhihua, an alpine valley city located at the junction of Sichuan and Yunnan, as an example. Established in 1965, Panzhihua is the economic center of the Sichuan-Yunnan border. The Yangtze River Basin economic belt is an important energy and raw material base. The largest steel base in western China is also the guideline for "three-line construction" based on "mountain, scattered and hidden". Thought, the only city built through planning. The geological structure of Panzhihua City is complex, with folds and faults developing, forming a rugged and topographical topography. Complex terrain conditions constrain the overall layout of the city of Panzhihua, and at the same time it has also achieved its unique urban ecological pattern. The planning of the "three-line construction" period is based on the topographical and geomorphological conditions and the distribution of resources, and the influence of the left-leaning thought of the country's "not focusing on building the city" at the time, adopting the strip-shaped group structure of the long-stem-shaped melon, and the scattered layout along the banks of the Jinsha River. Industrial + residential group. The city consists of 9 groups, each group is about 80,000 people, the group is 5 to 10km apart, and the total length is 55km. Because the terrain is complex and the group is scattered, production and living arrangements, transportation organization, pollution and disaster prevention, environmental protection and ecological security were the key points for urban planning at that time.

![Panzhihua City Urban Green Space System Planning Planning agency chart](image)

**Figure 4.** Panzhihua City Ecological City Planning and Design.

5. Conclusion
Under the macro background of "constructing ecological civilization", the concept of ecological planning is not only a genre in the planning discipline, but an inevitable trend in the transformation of the entire planning concept and method. Based on the concept of "ecology" in a broad sense, the eco-city planning is based on the constraints of unique environmental resources, drawing on international advanced concepts, methods and technologies, enriching and developing the concept of ecological planning, and forming a "first-in-first-down" planning method. Ecologically dominant planning approach. In the "ecological-led planning method", the construction of eco-city must highlight the planning characteristics of "ecological-led" from the three levels of public policy, layout concept and control guidelines, in the "natural ecological pattern, land use layout mode, green Innovate in areas
such as transportation, ecological community mode, cultural heritage, water resources utilization and energy utilization, and form a set of ecological planning concepts, methods and steps that can be replicated, implemented and promoted. The scientific urban ecological development is not only the fundamental task of urban construction and development under the new situation, but also the key link to promote the comprehensive development level of China's cities.

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