Research on the Strategy of Urban Green Space System Planning Based on the Eco Oriented Development Model

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Abstract — In this paper, the author studies on the strategy of urban green space system planning based on the eco oriented development model. This research aims to explore specific contents of the Green Space System Planning that integrates with Urban General Planning. Based on the concept of "eco-city", the top priority of urban planning is used to build up consensus, to achieve the transformation and regeneration in the urban planning system, through the guiding ideology, procedures, mechanisms, planning content, the implementation guarantee and so on. The paradigm shift is the key city to improve planning.

Keywords - strategy; urban green space system planning; eco oriented development model.

I. INTRODUCTION
Cities originate from the clustering of people. Urbanization is one of important part of evolution of human society. One of the basic features of urbanization is that continuous generation of contradictions and conflict resolution, and continuous generation of new contradictions and new problems to solve. The contradiction between habitability and non-habitability is a pair which always accompanied by cities and urbanization, and, the problem of the habitability of the public space in urban community is the key issue of the habitability of urban. How to make life better for city? On the one hand, many cities hold high flag on habitability of urban planning, construction and development. On the other hand, modern and surgery reconstruction of urban is very normal. Where to go? Our country has already been at the crossroads about sustainable development of urbanization. In China, the "twelfth-five-year plan" period may be historical opportunity for all-round transformation of urban development. At present, Urban Green Space System Planning (UGSSP) has been given great attention in China. Specific working phrases of UGSSP, which were always separated and disintegrated from Urban General Planning (UGP), have gradually transformed to synchronize and update with UGP. In 2004, the author took part in the academic research work of “The Ecological Environment Research of Tianjin City” which forms a part of “The Revision of Tianjin Urban General Planning (2004-2020)”. In this paper, we author paid more attention to the research of the UGSSP in suburban areas, and gradually put forward the viewpoint of enhancing current contents of UGSSP and adding a new planning layer named Green Space System Planning in Urban Planning Area (GSSP in UPA).

Adding a new layer of GSSP and increasing leisure space for citizens. The gap between current UGSSP and Urban Regional Green Space System Planning (URGSSP) is so big that a new transitional layer called GSSP in UPA. Concerned

special distribution, landscape types and activities, the layer could meet the demands of citizens’ playing, leisure and recreational activities. Preserving suburban green spaces and improving urban ecological environment. Presently, bad-controlled and low-management urbanization has happened in suburban areas and large natural spaces have been coroded and polluted. If planners can draw up contents of the GSSP in UPA of which integrated with UGP, and link urban construction with natural environmental protection, urban sustainable development could be possible. Coordinating city and country relationship and confining urban sprawl. GSSP in UPA, which can assign suitable developing space for cities and countries, leading the development of regional spaces form new functional groups, and avoid cities expanding around original urban areas.

With the serious problem of environment in the course of urbanization in China, many cities are taking big movements of urban greening. However, in the actual activities, we have done many things that damaged the urban ecosystem because of the lack of ecological knowledge and related technics. In the condition that we haven’t adequate green space in our cities, we also haven’t rational green space pattern, and when we design a site in the city, we often neglect the nature ecological function and course. These lacks greatly debated the ecological benefit of green space, and, at the same time, they wasted numerous human and material resources. Landscape ecology developed very quickly from the 1980’s, with the combine of landscape ecology and landscape architecture, theory of landscape ecological planning was born. Theory of landscape ecological planning is a theory with the background of information society. It just analyzes the site as a whole ecosystem, then organizes and harmonizes the elements in the system.

II. THE LITERATURE REVIEW
The urbanization process was developing rapidly in China. It entered a new urbanization stage now, which demanded a transition from size expansion to quality
promoting. Urbanization made the urban system complicated. It resulted in complicated in internal elements and structure of the green space system, and more closely in the relationship with the external environment. All of this put forward new requirements for urban green space system planning. Green space system was an open system. In addition to the interaction of internal factors, there were interaction and mutual restriction between the system and the external environment. Comparative study method was used to analysis the existing problems in the planning of urban green space system and extract the factors affecting the urban green space generation. Deductive reasoning method was used to treat the reality and the developing law and trend in the future dialectically, to analyze the relationship among elements of green space system, as well as the relationship between layout structure and function of green space, to explore the developing process and generation rules of the spatial form of green space system, to clarify the generative mechanism of the spatial form of green space system. The synergistic theory was applied to the green space system planning to discuss the synergistic layout principle and the planning method of urban green space system based on the generative mechanism of the spatial form of the green space. Through the practice test, the scientific of the synergistic planning method was proved, and its problems could be found to promote the research work to deepen and perfect.

Factors of the urban green space generation were summed up. According to the principles of significance, comprehensiveness and systematic, the main factors selected from multitudinous factors which affect the urban green space generation. They were divided into 3 categories: basic factors, endogenous driving force and exogenous guiding force. The basic factors including the natural resources and human resources conformed the framework of urban green space. Endogenous driving force included recreational function requirements, disaster prevention requirements, landscape requirements and ecological requirements. They were motive power of the green space generation. Exogenous guiding force included the social environment and economic environment. They guided the developing direction of green space.

The generative mechanism of the spatial form of the urban green space was revealed. It is pointed out that the development of urban green space system was a composite process of self-organization and hetero-organization. In the generative process of the spatial form, through self-organization mechanism in its own laws, and by artificial control, green space system improved continuously by the outside direct intervention. Its mechanism was consists of 3 aspects.

1. Appropriated mechanisms complying with land characteristics. The distribution of green space is influenced by natural resources and cultural resources. It can protect the resources.
2. The self-organization mechanism restricted by functional mechanism. In the restriction of recreation, disaster prevention, ecology and landscape functional mechanism, and followed the principle of coordination function, spatial form of green space was self-organized and the structure became more orderly.
3. External regulation mechanism. The social and economic environments were the exogenous guide force to the generation of the spatial form of green space, controlling and guiding the green space generation. Generative mechanism of green space revealed in this research belonged to a blank-filling work in some extent. It was of scientific guidance meaning to urban green space planning.
4. A pattern of functional synergy of the urban green space system was established in Wang’s paper [1]. Based on the functional synergistic mechanism in recreation, disaster prevention, ecological and landscape etc. of the green space and taking multifunctional coordination as the goal, a networking layout pattern of green space system was point out which could exert all functions of urban green space. This model makes green space service range to cover the whole city, and make area park to be located in the green belt. A good structure is formed. The green space can also effectively avoid disaster, play ecological and landscape function of green space.
5. A method of synergistic planning of green space system coordinating in several aspects was established in Li’s paper [2]. By using the system theory to introduce the synergistic viewpoint, on the basis of the generative mechanism of the spatial form of green space, theory and method of the green space system planning were pointed out, which was guided by mechanism, coordinated in internal function and with external environment. It was an innovative attempt. Based on docking with current outline of green space system planning, the function system of green space was decomposed into a classification system of green space that is the current national standard, so as to make the synergistic planning method of urban green space system operable [3, 4].

The main innovations of Wu’s paper shows that the variety, the complexity, the humanization, the social justice, and the traditional habitability are main contents from the post-modernism, and these are keies of habitability of the public space of urban community. [5] The construction of narrow streets and small blocks system by community unit is the basis for urban habitability. The planning and construction of inhabitable green space and square in urban community is necessary measure to raise the level of urban habitability. The main disadvantages of his paper are that the research for nonmaterial public space in urban community is short, and the quantitative analysis for public space in urban community is not enough [6].

III. THE ECO ORIENTED DEVELOPMENT MODEL

Currently, urban and rural development is facing environmental, economic and social crisis, transformation of development is strongly requested. Ecological, low-carbon city planning and construction, more than the appeal from experts and scholars, is gradually realized and accepted by the society planning; and vision of the form of pure theory, is starting with implemental construction work which becomes the key elements of the transformation of city development. Based on the basic theories and ideas of the "eco-city", this
article comes up with a series of requirements, in order to improve planning work [7, 8]. The emergence of eco-city concept represents that people are willing to improve the urban environment and development conditions, that aims to pursue of the ideal and high quality urban development goal, its meaning is prominently reflected in the health, coordination and sustainability. Practically, the implementation of eco-city is less effective, because of the complex interweave of the social-economic-natural factors, influence of eco-city between regional systems, the long-term process of the eco-city construction, the two sides of eco-city planning and construction etc. Draw on a complex scientific theory, and actively improve the eco-city planning and construction activities, the research of integrity and planning should be carried out in urban and rural planning system, with a combination of qualitative and quantitative research methods, emphasizing the multi-disciplinary research, focusing on micro and macro combination.

Based on the concept of "eco-city", the top priority of urban planning is used to build up consensus, to achieve the transformation and regeneration in the urban planning system, through the guiding ideology, procedures, mechanisms, planning content, the implementation guarantee and so on. The paradigm shift is the key city to improve planning. The transformation of contemporary urban planning, the concept of "ecology-oriented" leads to renew planning value and update the planning epistemological shift from passive protection of ecological environment to the active construction of livable environment, from economy-driven development planning shift to people’s livelihood and led the coordination of planning, from the isolated single city planning shift to collaboration and governance of the city-the region. Procedure and mechanism are important for the urban planning improvement. Established ecological planning model is well coincident with the statutory planning, which is unable to play a positive role. In this study, adding the working mechanism of statutory ecological special study to integrated system, analyzing the ecological survey and evaluation of the eco-oriented planning target, strategic control of ecological layout, ecological support system and policy t, planning and implementation of assessment etc. to implement the ecological, low-carbon development concept and requirements. Aim to achieve effective implementation of the ecological, low-carbon development, all stages of regional plan, comprehensive plan, and control and detail plan need to improve the planning formulation content. From the view of implementation mechanism, the current city planning "eco-loss" is that because of the extensive urban development m, which closely associated with government action. The future planning development relies on the bottom-up force of the public planning cultivation. As long as effectively cultivate bottom-up force of the public planning, help the implementation of low-carbon planning content from the deep mechanism level. The figure 1 shows the pre-development habitat conditions of eco oriented develop model.

Imagine an underutilized inner-city neighborhood transformed into a vibrant, attractive, and highly desirable place to live and work where the entire 35-block ecosystem mimics the behavior of a pristine forest, even as the area’s population and built space increase fivefold. Now picture a development built by both public and private dollars returning positive cash flow that is invested back into advancing this development’s sustainable goals each year. The Portland (Oregon) Development Commission (PDC) dreamed of such an environmental and financially sustainable place; the Lloyd Crossing Sustainable Urban Design Plan not only proved that it could be built, but created a new model for urban planners worldwide. The gap between current UGSSP and Urban Regional Green Space System Planning (URGSSP) is so big that a new transitional layer called GSSP in UPA. Concerned special distribution, landscape types and activities, the layer could meet the demands of citizens’ playing, leisure and recreational activities. Preserving suburban green spaces and improving urban ecological environment. Figure 2 shows the existing habitat conditions in 2004 and 2050 per plan habitat conditions.

**IV. THE CASE STUDY**

Modern eco oriented development includes the following eight aspects: first, to ensure the security of national food and the health of people under the guidance of modern food concepts; second, to depend on modern technology to inherit traditional Chinese green space technology and absorb modern high and new technology; third, based on the intense combination of technology and labor, to develop modern green space system characterized by intense technology and

![Figure 1. The pre-development habitat conditions of eco oriented develop model](image1)

![Figure 2. The existing habitat conditions in 2004 and 2050 per plan habitat conditions](image2)
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The development of eco oriented development and continuous development not only suits the reality in China, but also the general direction of the world's green space. Since the end of 1960s, many countries had put forward concepts such as organism green space, bio-green space, natural green space and continuous green space and put into implement. Because these modes are all directed by ecological laws and have the coordinated development of ecology, natural resources and green space, they can be all categorized as “eco oriented development.” Since the entrance into 1990s, some countries took continuous development of green space as a basic developing strategy and made concrete action plans. Beginning from 1980s, China has developed a whole series of green space system. In recent years, China put the continuous development of green space as a long-term guideline and drafted the “Green Space Action Plan for the 21st Century.”

REFERENCES