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# Creating a Humanistic Community under the Concept of Dialectical Deep Ecology: Constraints and Optimizations Go Hand in Hand

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**Abstract.** This paper discusses the implementation strategies of creating an eco-community in the new era from an overall perspective of ecological philosophy. First, based on the review and dialectical analysis of relevant research on eco-community and deep ecology, it points out the dilemma we are facing in the process of eco-community construction, the lack of implementation guidance between theory and practice in China, and the applicability of ecological philosophy perspective. It then proposes a coping attitude to create a people-oriented community under the overall ecological view; second, this paper makes a targeted analysis of the typical cases and gets some innovation inspiration; finally, based on the above theoretical and practical analysis, from the ecological, economic and social aspects, the paper puts forward the strategies of creating an eco-community with both constraints and optimization, to provide help for the transition stage of completing self-realization of ecological consciousness. This paper aims to jump out of the narrow humanism, start from the overall ecosystem to the concrete operation of creating a community, to better implement ecological strategies, and guide the community to complete the upgrade and transformation.

## 1. Introduction

The community is not only the living unit of human groups in the city but the most basic group space for people to live. Due to the advanced nature of social development today, human beings in the community are facing the dilemma in the process of self-awakening, a choice between a better ecological environment and a better quality of life. Besides, the core value of deep ecology cannot be ignored in the process of creating an eco-community in the context of contemporary society. It should be noted that for the theoretical and practical research of the eco-community, there is little analysis of eco-community creation from the perspective of ecological philosophy, and implementing eco-community also lacks theoretical support. Therefore, this paper analyzes and interprets the basic unit community in urban development from various aspects, combining dialectical deep ecology. It comes up with the method of eco-community construction with constraints and optimizations to promote the implementation of the eco-community and guide the completion of the upgrade and transformation of urban communities in the self-realization transition phase of ecological awareness.



## 2. Literature review, problem discovery and coping attitude

### 2.1. Eco-community

*2.1.1. The concept and implementation of eco-community.* The community is the basic operational unit and an important carrier of the urban living environment. As the basic unit of eco-city, the community is an important part of eco-city, and also the key to the implementation of eco-city [1].

The idea of the eco-community has a long history, and has witnessed a continuous exploration from generation to generation. In China, ancient related works such as *Guanzi* and *Zhaijing* have proposed that the form of residences and settlements should be constructed according to the external ecological environment [2]-[3]. But for the phased feature of China's development, the related theories lacked the overall level of systematicness and strict historical, logical interpretation. In the West, the idea of eco-design was formed after a well-developed industrial civilization. The original was the 'Garden City' proposed by Ebenezer Howard, which enlightened people's ecological awareness in community construction [4]. Subsequently, from the end of the 19th century to the 1980s, through the budding period, the exploration period, and the formation period, the principles of ecology began to be applied to urban community planning, emphasizing the pursuit of 'human-society-environmental' harmonious humanism [5]-[7].

From the 1990s to the present, western eco-community has gradually matured. In 1991, the concept of eco-community was first proposed by Robert Gilman, who believed that eco-community is a human-scale and multi-functional residential area, where human life is combined with the natural environment in a harmless way [8]. In 1995, 'Global Eco-village Network, GEN' was established in Findhorn, Scotland. It presented that eco-community is a city or rural community that integrates a sustainable lifestyle. Residents of their communities achieve the goal of combining a cooperative social environment with a low-affected lifestyle [5]. After entering the 21st century, eco-community has become a common concern area. Successful implementation cases include the Eco-community in Findhorn and the Zero Carbon Community in Beddington, UK, and the Vauban Community and the Field Community in Freiburg, Germany. In order to further regulate the construction of eco-community, various index systems were introduced, such as the *Leadership in Energy and Environmental Design (LEED)* developed in US, the *Building Research Establishment Environmental Assessment Method (BREEAM)* developed in UK, the *Comprehensive Assessment System for Built Environment Efficiency (CASBEE)* developed in Japan, and some sustainable standards developed in Germany and Dutch [5].

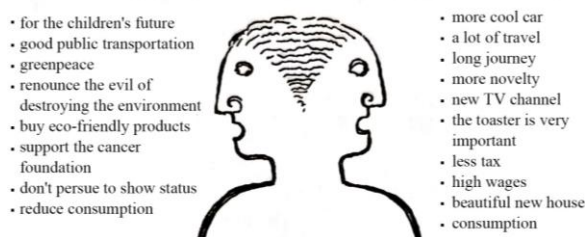
In the 1990s, the concept of eco-community was introduced into China. Professor Zhu Xijin proposed in 1994 that eco-community is a human habitation, which can strengthen the role of settlements as a base for human development, integrate the ecological functions of multi-phase and multi-level environments, and strengthen the self-coordination ability of the residential area [9]. Shen Qingji believed that the eco-community is a human settlement of the city which is planned, constructed, operated and managed under the guidance of the basic principles of ecology [10]. Afterwards, some scholars believed that the characteristics of eco-community should include public participation, mixed functions, cultural context, human-community-environment symbiosis, and some other diversified features [5]. From 1980s, the practice has gone from the slogan of clean communities to the community construction wave in the 1990s until the trend of building the ecological civilization in the community. After entering the 21st century, the government have successively issued several guiding documents on the construction eco-community, such as the *Technical Assessment Handbook for Ecological Residence of China* in 2001, which provides an ecological perspective for the construction of residential areas. Then the state issued a series of relevant standards, such as the *Evaluation Standard of Green Building* in 2006, and the *Technical Requirement for Environmental Labeling Products Eco- Housing* in 2007 [5].

In general, no matter in the West or China, people emphasize the coordinated development of nature-economy-society in community construction, and the participation of multiple subjects during

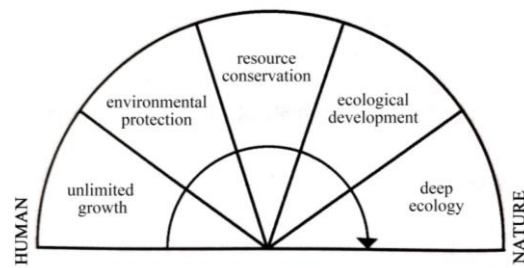
eco-community construction. However, compared with the West, although China has developed relevant concepts and consciousness, and has issued many policies, the corresponding implementation is difficult. This is because the research in China started late, and there is a lack of theoretical guidance on how to implement between the theory and the practice.

**2.1.2. Problems and reasons for the difficulty of implementing eco-community.** At present, the construction of eco-community in China is in the stage of practical exploration, and still need to carry out a lot of research and exploration [5]. Among them, there have emerged some problems in implementing ecological concepts, mainly reflected in the low active participation of residents.

In the context of rapid urbanization and the development of advanced technologies, we face a dilemma in the choice of community life. On the one hand, we hope to have a better natural environment; on the other hand, we want more new gadgets and faster cars, then we are becoming the modern Janus (figure 1) [11]. However, many planners ignore such contradictions and the selfishness of people in community planning and design. The beautiful wishes held by planner are contrary to the characteristics of individual pursuit and enjoyment, which is a fact that it is difficult to break through. Most of Chinese current research and practice is concentrated on a relatively shallow level. Although attention is paid to the participation of users and the place-making, how to better implement ideas is the difficulty of promoting the ecologicalization of communities in cities. Such a contradiction is not hopeless. The dialectical deep ecology concept can resolve and coordinate it, so that these two good wishes can be interdependent. Looking at the aforementioned theories, for the construction of eco-community, how to implement ideas and planning theories are rarely put together, and there is little connection with the perspective or ecological philosophy. Therefore, this paper attempts to guide the reader to jump out of the planning and design of the eco-community itself, and to look at the problem from a new perspective, hoping to give full play to human subjective initiative to create communities based on the overall ecological view.



**Figure 1.** Janus: a modern god of two faces.



**Figure 2.** The evolution of the relationship between humans and nature.

## 2.2. Dialectical deep ecology

In fact, as early as the World Future Research Conference held in 1972, ecological philosophers Arne Naess first proposed the concept of deep ecology. The concept was formally elaborated in 1973 in his paper *The Shallow and the Deep, Long-Range Ecology Movement*, pointing out that whereas shallow ecology only focuses on surface phenomena such as pollution and resource depletion, deep ecology takes into account complex issues such as population policies, resource policies and new pollution-free technologies [11]-[13]. Naess argued that shallow ecology is anthropocentric and only cares about human interests. Deep ecology is non-anthropocentric and holistic and is concerned with the interests of the whole nature. Naess criticized the narrow humanism and called for people to discuss and think about the world with a holistic ecological view (figure 2) [14].

Deep ecology originated and matured in the United States, Europe, and other western societies. From the 1960s to the present, it has experienced the budding stage, the initial stage, the development stage, the mature stage, and the comprehensive development stage [12]. In the 1980s, the Australian ecologist Fox further perfected the theory of deep ecology. In his book *Toward a Transpersonal*

*Ecology*, he made up for the lack of attention to individuals in the theory system of Naess by defining 'beyond the individual' [15]. And Alan Drengson compiled *The Selected Works of Arne Naess: Volumes 1-10* in 2005, which systematically collected the works of Naess and became the most comprehensive work reflecting his theoretical ideas [12][16]. After this idea was introduced into China, it has also received attention and in-depth research by Chinese academia. Lei Yi from Tsinghua University is a representative scholar. His book *Deep ecology: Interpretation and integration* systematically analyzes the generation, theoretical system, core issues, discipline foundation and integration, and practice of deep ecology [12][17].

The emergence of deep ecology is the modern environmental movement, especially the transition of ecological ideology from shallow to deep [12]. However, some scholars believe that this concept is more radical. The Indian scholar Ramachandra Guha pointed out that deep ecology distinguishes human attitudes toward nature as human-centric and ecological-centric, and then takes ecological integrity rather than human needs as the basis for action, which is unacceptable [18]. Admittedly, deep ecology theory does have certain limitations and is kind of radical. However, its revolutionary value is undeniable, and its goal help human beings and the environment to be better interdependent, so its core content can still be applied to different regions, as long as the deep ecology theory can be treated and applied dialectically. 'Self-realization' is the starting point and the ultimate goal of the whole theory. Deep ecology puts forward the slogan of 'simple means, rich purposes', and calls for self-realization by changing the lifestyle. It believes that deep ecological consciousness helps people to give up the lofty standard of material life autonomously and choose a lifestyle that satisfies the harmony between humans and nature. However, to complete the self-realization is a lengthy process, and Naess ignored the fact that human is the main body of understanding and transforming nature. Without the existence of human subjectivity, a gap will appear between human society and deep ecological consciousness and self-realization [12]. Therefore, only guide and optimize continuously in the overall ecological view, and according to the different conditions, can humans complete self-realization finally.

### *2.3. Coping attitude: creating a people-oriented community under the overall ecological view*

Paying attention to ecological development does not mean to reduce the quality of people's life, but to build a harmonious life between human society and the environment from an overall ecological perspective. It is a better choice to guarantee people's quality of life under the premise of complying with the laws of nature. So we have to change the way we think about nature and human beings fundamentally. Deep ecologists believe that the goal of deep ecology is to transform the concept of deep ecology into the guiding ideology of practice. Cultivating the ecological consciousness is the first step to realize the transformation from the deep ecological theory to the deep ecological practice. By experiencing the ecology and perceiving nature, we can realize that people are integrated into nature, to achieve a conscious shift [12]. Therefore, we need to create a pleasant place for people to feel the ecological and natural beauty, and cultivate people's consciousness transformation by combining constraints with optimizations, and start the transition from shallow ecology to deep ecology.

Based on the above analysis, looking at the problem from the perspective of ecological philosophy can improve the practice. Therefore, this paper starts from the dialectical deep ecological concept, implements the people-oriented concept under the overall ecological view, analyzes different situations, and proposes appropriate strategies for creating a harmonious life between human society and the environment, to complete the upgrade and transformation of the community.

### **3. Reference points from domestic and foreign excellent cases**

Since the concept of eco-community was proposed, scholars and enterprises have been focusing on the research and application. Therefore, some relevant demonstration projects have emerged. The following is the analysis of some typical excellent cases, to extract the reference points related to this paper, thus to provide innovation points and inspiration for improving community creating strategies.

### 3.1. Extract relevant reference points

Some measures have now been generally used in community building, such as the mixed land mode of functional diversity; the application of passive green technology, the use of building orientation, the reasonable setting of trees; the heat preservation and energy storage wall for maximum energy saving. Moreover, this section selects typical cases of ecological communities in different regions. These excellent cases have shown their respective advantages in using relevant material resources, transportation design, land use mode, and other aspects with overall consideration (table 1) [19]-[25].

**Table 1.** Innovation strategies extraction of typical eco-community cases

Name	Size (hm <sup>2</sup> )	Innovation Constraints	Optimations
Los Angeles Eco-village, America [19]	4.5	a car-free community dominated by bicycle and public transportation; housing equity cooperative system to share material resources such as cars, gardening equipment, washing machines, and dryers	organic planting to supply domestic demand and improve the utilization of resources; alternative technologies with small-scale, low-cost, simple operation, such as water bio-purification, self-organization and cooperative residence mode; various activities and businesses
Teren Community, Netherlands [20]	6.0	a limited number of car parking spaces; separated locations between residential buildings and parking lot	
Vauban Community, Germany [20]	41.0	small block division pattern; using public transportation	flexible parking, like the underground garage or vertical parking lot
Schoonschip Community, Netherland [21]	0.9	sustainable development plans formulated by relevant organizations; multiple hearings, projects' initiation, and supervision committee	the regional response to the site and climate, using as many local elements as possible; circulating technology; modular production; intelligent control and public participation
PARK20/20, Netherland [22]	8.9	the principle of 'ecology, economy, and fairness'	the natural elements; the recycling of key resources and wastes; the history and the culture
Scharnhauser Park, Germany [23]	141.0		coordinating the relationship between different types of functional areas to create more open space
Beddington Community, England [24]	1.7		using waste wood and fast-growing forests grown in the community itself for energy
Halifax Community, Australia [24]	2.4	twelve planning principles and 21 operational strategies are proposed	a 'community-driven' mode with the participation of international organizations and residents
Qinhuangdao Community, China [24]	56.0		various rainwater collection systems
Longxiang Century,	33.0	garbage classification and recycling; residents'	the flood reduction design and the rainwater resource utilization

China [24]                      autonomy

Chanson Lake 100.0  
International  
Community,  
China [25]

landscape construction simulated by the  
ecosystem; circulation improvement of  
the local microenvironment under the  
infiltration of the river

### 3.2. Summary and inspiration

Based on the analysis and comparison of the above cases, it can be seen that foreign ecological communities have diversified strategies. While they have their characteristics of subjectification, they do not ignore the overall consideration of other aspects. However, the construction of the eco-community in China started late. Although some demonstration projects of the eco-community have emerged in succession, they have not yet been fully created. On the one hand, China focuses more on the application of technology and lacks specific implementation strategies. On the other hand, most of the ecological communities that China focuses on are medium-sized and large-sized with a single model. For implementation, it is recommended to demonstrate projects started in small-sized communities and then extended to large-sized and medium-sized communities as appropriate.

In a word, long-term strategic planning should be made for creating the eco-community, and some small and specific projects should be implemented. Constraints and optimizations are parallel, and comprehensive optimizations can be carried out based on ensuring necessary constrained policies.

## 4. The strategies of creating eco-community with constraints and optimizations

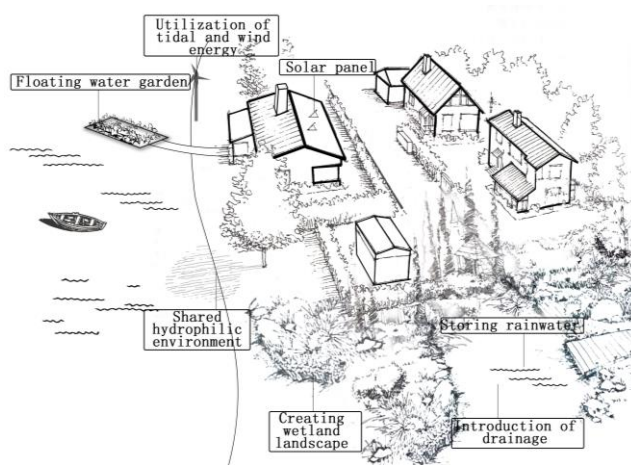
The creation of people-oriented community under the overall ecological concept need to implement from the ecological, social, and economic aspects. By combining constraints with optimization, we can focus on the implementation and operation of each link while grasping the whole which is of guiding significance to both the new community and the existing community transformation.

### 4.1. Ecology -- regional response to natural elements

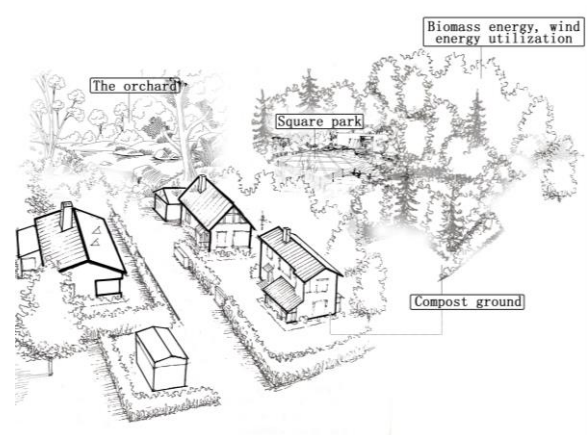
Each city has different natural landscape resources. Under the overall ecological view, giving full play to the subjective initiative of human beings means to restrain the waste of resources, optimize the recycling system of material resources, to improve the utilization rate of resources, and to make the artificial recycling system and natural recycling system orderly transit and harmoniously coexistent.

*4.1.1. Make use of regional resources to build the community environment.* For communities near the waterfront, water-related elements can be introduced to create a landscape, such as wet-land, water-friendly platform, and floating gardens on the water. Besides, the unique tidal energy, sea wind energy, and solar energy at the water edge are utilized for energy supply, which can be combined by relevant passive technologies (figure 3). For communities in mountainous areas, afforestation should be carried out following local conditions. And natural forest landscape should be introduced to orderly connection with man-made forest landscape, such as orchards, to create an aerobic micro-environment and improve people's physical and mental comfort. Besides, mountainous areas have abundant biomass energy, which can provide environmental-friendly energy for the community. The black water discharged by the community can be returned to nature and fertilize the land through filtration and composting (figure 4). Finally, for communities or villages in the city central district, the rich public facilities in the downtown can be shared, such as the comfortable environment of ecological corridors, convenient public transportation, and public service facilities. Basing on the history and culture of different cities is a proper choice to develop urban agriculture, rain garden, and so on to create a comfortable micro-environment and an urban ecological cycle (figure 5).

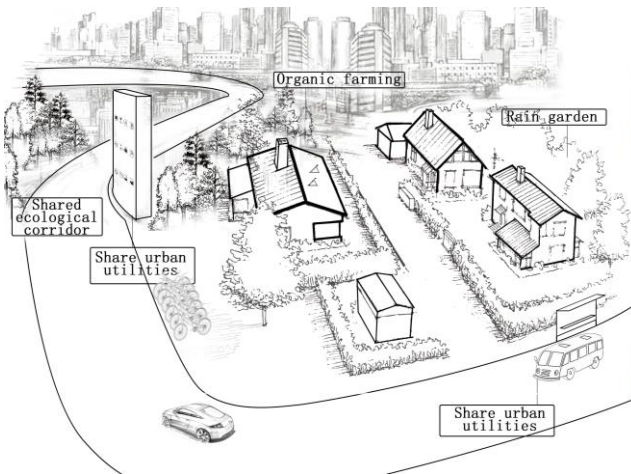




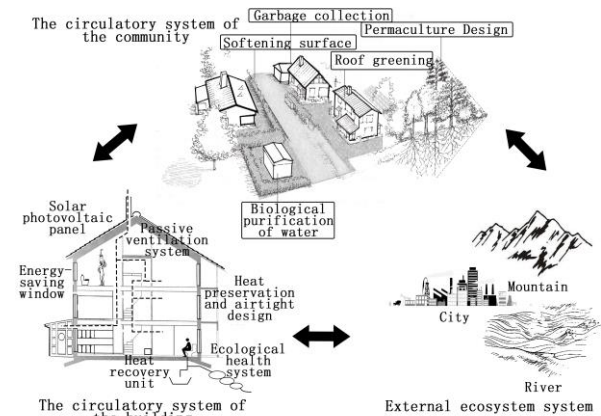
**Figure 3.** Schematic diagram of community resource utilization near the waterfront.



**Figure 4.** Schematic diagram of community resource utilization in mountainous areas.



**Figure 5.** Schematic diagram of resource utilization of urban eco-community.



**Figure 6.** The relationship between the three systems.

**4.1.2. An integrated circulatory system.** Under the overall ecological view, the building resource recycling system and the community artificial recycling system are connected with the external ecological network system, to form an ecological recycling system with both diversity and connectivity, so that the community and the ecology can borrow advantages from each other and integrate harmoniously (figure 6).

#### 4.2. Economy -- flexible and reciprocal policies

Based on the existing strategies for the operation process of the design and maintenance of the eco-community, this paper discusses the constraints and optimizations strategies for the typical problems related to economic development.

**4.2.1. Environmentally friendly priorities.** In the policy of restriction and optimization of vehicle problems, the living region can be divided into the car-owning community and the car-free community due to the specific situation. In the case of convenient and accessible bus routes, design car-free communities, and encourage taking a bicycle or public transportation. On the contrary, the community should limit the number of parking spaces and separate vehicles' locations from residents' building.



Underground parking spaces should be set up reasonably. Meanwhile, in terms of urban planning, accessible bus lines should be set up around the community. On this basis, new environment-friendly travel modes such as new energy vehicles can be developed and popularized. Preferential policies as the priority option of the well-oriented house type, discounted house price, and complimentary floor space can be implemented for car free households and households with environmental-friendly travel ways such as new energy vehicles, public transport, and bicycles. At the same time, it can promote the economic development of public transportation and new industries.

Similarly, for households equipped with vacuum toilets, urine separation vacuum toilets, household garbage shredder, household environmental-friendly wood-burning boilers, ceramic tile ovens, solar water heaters, and other environmentally friendly devices, residents can also get some preferential policies, such as priority chance of activity. This is equivalent that each household has a point book, and the more points related to environmentally friendly ecological, economic and social contributions are accumulated. The more concessions can be obtained.

Of course, every new type of environmentally friendly infrastructure today has its pros and cons, and residents will weigh the pros and cons. Therefore, it is necessary to develop and improve new technologies constantly and give reasonable guidance.

*4.2.2. Various intensive projects.* Develop various intensive projects to enable residents to consume selectively according to their own needs.

First, in addition to different house types, we can consider adding modular and diversified combination forms, as well as new relevant sharing strategies such as the operation mode of housing equity cooperative system, to increase the choice of residents and get a new income channel at the same time. Second, in car-free communities or intensive parking communities, the saved space can be provided with more garden or vegetable plots, so that residents with high floors can choose whether to buy a garden to build their own space after heavy work. Meanwhile, residents can share these garden plots with the community and develop cooperative projects together, allowing residents to build their own community environment by planting certain organic edible green landscapes. Finally, residents can share equipment and infrastructure such as community gym, car, gardening equipment, and be charged according to relevant costs.

In addition, the community can cooperate with different new enterprises or organizations to develop different intensive projects jointly, to ensure the full utilization of material resources and the residents can enjoy a comfortable environment, as well as promote economic development.

#### *4.3. Society -- the leading mode of change and innovation*

*4.3.1. Innovative operation management.* Multi-party organizations can be established to supervise each other and rationally plan the development of the community industry.

Relevant ecological cycle design organizations can use their professional knowledge and work with designers to allocate community resources rationally and design the cycle system according to the location and characteristics of the community, then build a harmonious living environment. The multi-party hearing management organization can listen to the voices of multiple parties and optimize the eco-community construction strategy. Relevant evaluation organizations can make a timely and fixed-point evaluation and analysis on the operation of the community and the relationship between people and the environment by using ecological footprint method, AHP method and other methods, which can objectively evaluate the advantages and disadvantages based on the application of existing strategies and promote the further improvement of eco-community construction. The relevant garbage sorting and recycling management organization can help and supervise residents to develop good environmental awareness. On the other hand, the development and reasonable registration of related industries, such as homestays, picking gardens, related ecological equipment and resource supplemented firms, and foreign cooperation, can not only standardize community management but also improve the profits of various parties.

In a word, the establishment of organizations and emerging industries can solve the employment problem, improve the commuting efficiency, increase the community income, better carry out community construction, and promote the harmonious neighborhood relations.

*4.3.2. Positive psychological guidance.* We will guide residents to upgrade their way of life and consumption. Conducting interviews and surveys with residents to understand their benefits and difficulties, and to improve in time. At the same time, the community residents will be given training and lectures on ecological lifestyle to form their awareness of sharing, recycling, and saving. Residents will be guided to choose green and healthy products and renewable energy in the consumption process, follow the principle of recycling in the using process to reduce environmental pollution. Guide the government to invest in environmentally friendly new technologies, such as rain gardens and sunken green spaces, to understand the positive results of short-term investment and long-term returns. Guide the developers to attract talents for the sake of ecological social development.

The designer plays the role of rational allocation of resources who is the coordinator. In the overall concept, the designer can not only stay on the surface or start on one aspect; when space is built, the designer should be clear about a word 'pull one hair and the whole body is affected'; In the actual operation, the designer should distinguish the primary and secondary, according to the natural, historical, cultural and other resources for subjectification of the tone design.

## 5. Conclusion

With sustainable urban development, the eco-community construction should not be ignored. Based on the dialectical theory of deep ecology, it is necessary to jump out of the narrow humanistic perspective to face the modern dilemma with the overall ecological view, and then to implement the subjective initiative of human beings and to use the strategy of constraints and optimizations in parallel to create an ecological place for people to resolve such contradiction. Chinese eco-community construction is in the primary stage, and the typical eco-community cases can give people some inspiration to improve in the later stage. Ecological, economic, and social development are complementary to each other. Therefore, in terms of the ecology, resource waste should be restrained and passive circulatory system design should be optimized. For the economy, the management methods related to hard targets and pollution should be restricted, the residents' environmental-friendly experience and the capital cycle should be optimized. As for the society, policies like setting norms, supervision, and evaluation should be constrained methods, and the consciousness of the complementary relationship between human beings, human living space, and the ecosystem should be optimized.

This paper sorts out and innovatively propose the strategies of creating eco-community from the overall ecological perspective. The paper has an innovative theoretical guiding significance for the in-depth implementation of the construction of eco-community in the new era, in a bid to plan and design according to different situations, and build community projects with regional characteristics, which can be shared, replicated and promoted, and finally improve humans to move towards the self-realization of ecological consciousness.

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