

Construction of Green Community Index System under the Background of Community Construction

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Abstract

Under the background of community construction, green community has become a concentrated embodiment of human pursuit of high-quality life. Green community plays an important role in saving energy, improving living environment and promoting sustainable development. By establishing the evaluation index system of green community, this paper attempts to make a more comprehensive evaluation from the aspects of resources, environment and management mode of green community, to effectively evaluate the development level of green community, to provide reference for government departments to manage and develop the development of decision-making green community, to provide guidance for planning and designing green community environment, and to provide direction for the construction of green sustainable development. At the same time, it is beneficial to the promotion and development of green environmental protection technology.

Keywords

Community Construction, Green Communities, Evaluation Index System

1. Introduction

With the development of the society, the community has become the basic environment of people's survival and development. In the background of community construction, the green community has become a reflection of human's pursuit of high-quality life. Green community plays an important role in saving energy, improving living environment and promoting sustainable development. By establishing the evaluation index system of green community, this paper tries to make a more comprehensive evaluation from the aspects of resources, environment and management mode of green community under the guidance of

ecological theory, effectively evaluate the development level of green community, provide reference for government departments to manage and develop the development of decision-making green community, provide guidance for planning and designing green community environment, and provide direction for the construction of green sustainable development. At the same time, it is beneficial to the promotion and development of green environmental protection technology.

2. Analysis of Related Concepts

2.1. Community and Community Construction

The concept of the “community” originates from the English Community, which is translated into “community of life” by Japanese scholars, and the German scholar Ferdinand has defined the community in such a way that it is human, with common values and a close relationship with the community of social life, that is, the community is a group of people that form a community of life and are geographically clustered together [1].

Jiade Luo, a professor at Tsinghua University, believes that under the guidance of the government, the spontaneous support of non-governmental organizations and the help of NGO, the community solves the problems of economic development, social harmony and social welfare through self-organization, self-control and self-development, and constantly promotes the collective social capital of the community in this process [2]. In a word, community construction is to transform and innovate the current situation of the community, inherit and carry forward the characteristic culture of the community, so as to enhance the residents’ sense of community belonging, reproduce the community or cohesion, and realize the coordinated and sustainable development of the community.

2.2. Green Community

Green community is a new concept of community development, which is based on the traditional community and emphasizes the importance of ecology and people-oriented. In addition, there are also differences in software and hardware between green community and traditional community. For example, the standard of environmental protection facilities in green community is higher than that in traditional community, and the construction of green community calls for public participation, and the public participation mechanism and environmental management system of green community are also more perfect. The connotation of green community is richer, the hardware aspect is: the construction of green building, garbage collection, wastewater treatment, energy-saving and emission reduction, green planting greening, new energy use and so on; the software includes the establishment of joint meetings composed of government departments, community neighborhood committees, property and so on, as well as regular environmental protection activities, and so on [3]. In addition, the green community advocates the shaping of citizens’ awareness of environmental

protection and participation in environmental protection, which is of great significance to the building of social citizens in the new century. The purpose of this paper is to make the community development not only pay attention to the protection of people's physical and mental health and environment, but also coordinate with the economic growth of the city and the green sustainable development of society.

3. Green Community and Community Construction

3.1. An Analysis of the Background of Community Construction

In China, community construction originated in Taiwan. Since 1950s, in order to solve the problems of unreasonable rural population structure, alienation of interpersonal relationship and low quality of life, the concept of community construction has been put forward in Taiwan in order to solve the ecological environment caused by local economic growth. The construction of community always adheres to the principle of "bottom-up, community autonomy, resident participation and sustainable development", and advocates residents to participate in community construction and discussion in order to realize the coordinated development of community culture, life, environment and industry [4]. The connotation of community construction is very rich, and the design level is also very diversified. Community construction aims to stimulate people's sense of social responsibility and participation through training and management of community residents, awaken the internal cohesion of community residents, stimulate residents' sense of local cultural pride, and thus promote the socialization of residents. In mainland of China, the development of community construction is very slow. In the inland areas, most communities follow the top-down community concept and construction approach under the background of the national conditions with the characteristics of our country [5]. At present, the slogan of "community leading and government paying" called for by community construction is difficult to implement in domestic communities. Social workers can type very limited aspects in the community. How to make more community residents invest in the construction of collective affairs under the guidance of social workers' professional skills and promote the further development of community green construction is the focus of the current research.

3.2. The Relationship between Green Community and Community Construction

3.2.1. The Construction of Green Community Is an Important Component of Community Construction

The upsurge of community construction originated in Taiwan in our country, and its innovative development mode and content make it one of the most breakthrough cultural policies in Taiwan in recent years. The implementation of this policy has promoted the implementation of Taiwan's policy from the top-down to the bottom-up transition. At that time, Taiwan society suffered a series of social changes, the emergence of civil society, the destruction of local

culture, regime instability and so on, made Taiwan's social reality increasingly prominent. The emergence of community construction is the product of community development and change in Taiwan, and its emergence plays a certain role in promoting the transformation of local society and culture.

The function of community construction covers different aspects, including social, cultural, economic and political aspects, among which the realization of social function is the most important goal of community construction. The social function of the community is embodied in the shaping of the people, that is, the building of the community residents, the protection of the people's social right to participate, the promotion of the self-government of the residents, the active cultivation of the residents' ability to participate in the public affairs, and finally the cohesion and the vitality of the community, Promote the overall development of the community. To sum up, we can summarize the definition of community construction as follows: community construction is to make full use of all the available resources inside and outside the community, extensively mobilize residents to participate, give full play to their own initiative, bring together the consensus and creativity of residents, and create a more perfect community political, economic and cultural environment.

However, the construction of the green community and the content and goal of the community construction are very consistent, and the construction of the green community is an important component of the community construction. The education of residents' environmental awareness, the inheritance and protection of local green culture, and the utilization of all local community resources are all consistent with the concept and goal of community building. The development and construction of green community will greatly promote the realization of the goal of community construction. Green community construction pays attention to the protection of ecology and humanization and is committed to cultivating residents' awareness of environmental protection and helping residents pay attention to their physical and mental health through rich and professional means of intervention. In addition, green community construction advocates that the economic growth of the community is synchronized with the green sustainable development of the environment, and its principles, ideas and measures complement each other in the construction of the community, so building a green community is one of the goals of community construction.

3.2.2. The Construction of Green Community Promotes the Process of Community Construction

The construction of green community is in line with the road policy of building a green and circular sustainable development environmental protection society in our country. This construction advocates adhering to the road of sustainable development, aiming at building a harmonious community in which everyone loves the environment and works together to build a green home. The principle of sustainable operation maintained by the green community is in line with the principle of community construction, and the construction of the green com-

munity will promote the deepening and refinement of the community construction in different ways, and the performance is summarized as follows:

First, in terms of social function. Residents are the main force to promote the development and growth of the community. In the process of construction and development, the green community pays attention to the cultivation of each resident's awareness of environmental protection, social responsibility, community affairs and so on, which is beneficial to the promotion of community cohesion and the reproduction of community vitality and plays an important role in promoting the shaping and development of "human" resources in community construction.

Second, in terms of cultural functions. The key point of establishing green community lies in the protection of community culture, which has been well inherited and carried forward in the process of its construction. At the same time, the community residents have improved the identity of community culture and deepened the understanding of community culture, which is very helpful to promote the development of community culture in community construction.

Third, in terms of economic function. The construction of green community emphasizes the propaganda, education and development of community green culture, emphasizes the construction and development of green culture industry, and encourages the community industry to inject the cultural concept of green environmental protection into the development. These measures are of far-reaching significance to the realization of revitalizing local cultural industry and realizing culture-driven economic development.

Fourth, in terms of political functions. The construction of the community and the construction of the green community as the people's livelihood project belong to the government's political engineering, both of which will promote the process of the people's livelihood projects.

3.2.3. Community Construction Promotes the Development of Green Community

With the principle of bottom-up, localization and sustainable operation, the community construction focuses on the comprehensive transformation of local cultural landscape, cultural landform and quality of life. It advocates to improve the overall quality of community residents by shaping the community "human", and promote the new climate of economic development of local and surrounding areas through the protection and industrial protection and industry. Therefore, community construction promotes the pace of green community construction from different angles, and it gives solid backing to green community construction in terms of concept and strategy.

4. Construction of Evaluation Index System of Green Community

4.1. Evaluation Index Selection

Community, as a small unit of the city, also belongs to a complex environmental

system. In this paper, based on the specific application of DPSIR theory (that is, driving force-pressure-state-influence-corresponding) at the community level, combined with the construction content of green community, the evaluation index system of green community is constructed from four levels (objectives, criteria, schemes, indicators), including 9 secondary indicators and 33 third-level indicators, as shown in **Table 1**.

The goal layer is that the whole green community pursues the goal, that is, the community reaches the green ecological standard in two aspects: software ability and hardware ability.

Criterion layer (primary index): the criterion layer can comprehensively and comprehensively describe the overall situation and future development trend of the evaluated green community. According to the content of green community construction, the main criterion layer is mainly divided into three levels: green construction, green management and green community life.

1) Green construction. The basic hardware construction of the community is the key part of green environmental protection, energy saving and emission reduction, including construction, energy, transportation, planning, environment and so on, which provides the most basic living facilities and environment for residents.

2) Green management. The important software part of green community construction is community operation and management. Including operation management, certification evaluation, reward and punishment mechanism, overall planning and other important aspects, to help the basic green living facilities play the greatest role.

3) Green community life. Including the community residents' green concept popularization rate and education and travel mode. The universal education of green concept is the fundamental starting point in the construction of green community, and it is also the most neglected aspect. The travel mode of residents is one of the most superficial criteria of green life.

The program level (secondary index): Is a further breakdown of the first-level indicator (guideline level) and the design of the various dimensions of the green community life. The green construction is divided into five aspects: green building, green energy, green transportation, community planning and ecological environment; the green management is divided into two aspects: management detail and residents' satisfaction; green community life is divided into two sub-items of public participation and green travel.

1) Green building. Building is the most important carrier of community life, large scale, large volume, belongs to the key part of green construction. The progress of energy saving, water saving, and recyclable building materials can greatly improve the green living standard.

2) Green energy. Green energy indicators include energy types and energy management. The types of energy are mainly reflected in the popularization of green new energy and the efficient utilization of old energy, while the energy

Table 1. Evaluation index system of urban green community.

Target layer	Criterion layer	The scheme layer	Index layer
Evaluation Index system of Urban Green Community	Green construction	Green building	Energy saving rate of new buildings
			Utilization rate of water-saving appliances
			Energy saving lamp utilization rate
			Proportion of recyclable materials
		green energy resources	Renewable energy utilization rate
			Proportion of municipal green lighting
		Green traffic	Energy classification and household metering rate
			Passenger and vehicle diversion ratio
		community planning	Walking distance of public station
			Site selection rationality
	plot ratio		
	Community matching perfection		
	Per capita living land area		
	Accessibility of public ancillary facilities		
	ecological condition	Noise environment reaching standard rate	
		green coverage ratio	
		Innocuous classification and collection rate of garbage	
		Non-traditional water source utilization rate	
		Permeable surface area ratio	
		Green irrigation rate	
Green management		Integrity of management mechanism	
		Measurement of energy consumption data	
		Meticulous management	
		Certification rate of environmental management system	
	Low carbon incentives		
	Disclosure of environmental information		
Resident satisfaction	Community security		
	Green community construction satisfaction		
	Residents' sense of community belonging		
	Green community life	Environmental publicity and public participation	
		Awareness rate of green community	
		Green low carbon propaganda education popularization rate.	
Green and low carbon travel	Green low carbon purchase		
	Community private car ownership rate		
		Community bus travel rate	

management mainly lies in the statistical management and scheduling of classified household and so on.

3) Green traffic. Green traffic is mainly public transport construction, reasonably improve the density of bus stations, reduce the difficulty of residents to travel, through convenient public transport travel to effectively promote the reduction of private car use.

4) Community planning. Community planning is the key part of green construction. The rationality of planning directly affects the difficulty of later operation and management of green community and the quality of green life. It mainly includes the rationality of site selection, the volume rate, the perfection of community matching, the per capita living land area, the accessibility rate of public supporting facilities and so on.

5) Ecological environment. Ecological environment index is the most sensory index for community residents. Ecological environment determines residents' living experience and recognition of green community, including green space construction, green irrigation intensity range, garbage disposal, noise management and other aspects closely related to life.

6) Meticulous management. The management and operation mechanism of green community management is the soul of green community. Its management must start from the green concept, the green idea runs through all the time. It mainly includes the soundness of management mechanism, the measurement of energy consumption data, the certification rate of environmental management system, the low carbon incentive type, the openness of environmental information and so on. Covers management, operation, evaluation, reward and other indicators.

7) Sufficient population. The index of residents' satisfaction emphasizes residents' feedback on the construction of green community. Green community life of the main poet, human feedback is the most important evaluation of the indicators. Mainly includes the residents to the community safety degree, the greening construction and so on aspect satisfaction.

8) Public participation. Public participation includes universal education of green concept within community residents and implementation of green community construction by residents. As the main body of the community, the participation of residents is one of the guarantees for the sustainable development of green community.

9) Green trip. The travel mode is a special evaluation index, which has an important influence on the carbon displacement, tail gas emission, noise, traffic pressure and so on, so a secondary index is established separately. And mainly comprises the ownership rate of the private car and the travel rate of the bus.

Index level (tertiary index): the most specific grass-roots index for infiltration evaluation. In order to measure the intensity, quantity and frequency required by the criterion layer, the three-level index should be selected as far as possible to measure the intensity, quantity and frequency that can be measured, compared and operated according to the above principles.

Table 2. Green community index, weight.

Target layer	Criterion layer	The scheme layer	Index layer	Weight		
Evaluation Index system of Urban Green Community	Green building (0.48)		Energy saving rate of new buildings	0.52		
			Utilization rate of water-saving appliances	0.22		
			Energy saving lamp utilization rate	0.14		
			Proportion of recyclable materials	0.12		
		green energy resources (0.22)		Renewable energy utilization rate	0.52	
				Proportion of municipal green lighting	0.17	
				Energy classification and household metering rate	0.30	
		Green construction (0.65)	Green traffic (0.20)		Passenger and vehicle diversion ratio	0.50
					Walking distance of public station	0.50
			community planning (0.04)		Site selection rationality	0.25
					plot ratio	0.31
					Community matching perfection	0.21
	Per capita living land area				0.13	
	Green management (0.18)	ecological condition (0.06)		Accessibility of public ancillary facilities	0.11	
				Noise environment reaching standard rate	0.14	
				green coverage ratio	0.25	
				Innocuous classification and collection rate of garbage	0.13	
				Non-traditional water source utilization rate	0.12	
				Permeable surface area ratio	0.25	
		Meticulous management (0.86)		Green irrigation rate	0.12	
				Integrity of management mechanism	0.19	
				Measurement of energy consumption data	0.29	
				Certification rate of environmental management system	0.23	
				Low carbon incentives	0.14	
Disclosure of environmental information				0.16		

Continued

		Community security	0.39
	Resident satisfaction (0.14)	Green community construction satisfaction	0.39
		Residents' sense of community belonging	0.27
		Awareness rate of green community	0.45
	Environmental publicity and public participation (0.76)	Green low carbon propaganda education popularization rate.	0.35
Green community life (0.18)		Green low carbon purchase	0.21
	Green and low carbon travel (0.24)	Community private car ownership rate	0.50
		Community bus travel rate	0.50

Table 3. Green Community Evaluation Registration Classification form.

Grade	Green community				
	One-level	Two-level	Three-level	Four-level	Non-green community
Status	Perfect	Better	Good	Pass line	Fail
Fraction	100 - 90	90 - 80	80 - 70	70 - 60	Under 60

4.2. Evaluation Method and Determination of Index Weight

Green community is a complex system composed of many components, green construction is its foundation, green operation management mode is its guarantee, green low-carbon lifestyle makes its core, including many sub-modules, such as physical material, management technology application and ecological culture shaping, which not only have independence, but also related to each other, which makes the evaluation of green community have the characteristics of in unity, hierarchical difference and fuzziness. Analytic hierarchy process (AHP) can help us to separate different levels of systems, analyze the problems of each level separately and compare with each other, reduce the uncertainty and fuzziness of the analysis results, and accurately quantify the statistical analysis of the memory of the indicators. The specific weight calculation results are shown in **Table 2**.

4.3. Evaluation and Classification Determination

Because there is no perfect evaluation grade classification standard for green community at present, according to the index weight calculation, referring to the evaluation grade classification standard of low-carbon community, using the evaluation model established by multi-level comprehensive evaluation method, on the basis of multi-level weighted summation calculation, the green community grade classification standard is established, and the total score of the final score is set to 100 points. Among them, each level of green community is divided into five levels according to the score registration, as shown in **Table 3**.

5. Conclusion

With the vigorous development of green community, in-depth theoretical research is particularly important. According to the concept of green community, this paper puts forward an index system in line with the sustainable development of green community under the background of community construction. According to the established evaluation index system of green community, the optimal allocation of factor resources of green community can be realized, and the positive factors can be mobilized comprehensively and systematically, to provide scientific basis for the development of green community.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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