

Planning Method Study on the Ecological Restrained Construction Area from the Perspective of Governance: A Case from Yangzijin, Yangzhou, China

Rushi Tan, Yilun Xu, Xiaohui Wang

Abstract—The restrained construction zoning, an important part in the urban master plan, is a necessary planning tool to control the city sprawl, to guarantee the reservation implementation of the various types of protective elements, and to realize the storage of the essential urban spatial resources. Simultaneously, owing to the diverse constitutes of restrained construction area and the various stakeholders involved in, its planning requires an overall consideration of all elements from the perspective of coordination+, balance and practicability to deal with the problems and conflicts in this process. Taking Yangzijin Ecological Restrained Construction Area in Yangzhou as an example, this study analyzes all the potential actors, agencies and stakeholders in this restrained construction area, as well as the relevant conflicts between each other. Besides, this study tries to build up a planning procedure based on the framework of governance theory, and proposes a possible planning method that combines "rigidity" and "flexibility" to protect the ecological limitation boundary, to take every interest into account, and to promote economic development in a harmonious society.

Keywords—Restrained construction area, governance, stakeholder, flexible stratagem, China.

I. INTRODUCTION

RESTRAINED construction areas are defined as “the area that is not suitable for urban development projects in the master plan. When construction is really necessary, the developing projects should match the integrated and comprehensive development requirements of the cities and towns. In addition, these projects should strictly control its partnership mode, scale and developing intensity.” In order to keep the sustainable growth of the towns, to protect the ecological environment and resources and to meet the demand of the infrastructure and public safety, a number of different types of planning in China and abroad have taken restrained construction areas delineation into account [1].

The concept of restrained construction area is generated from the requirements of protecting the natural, historical and cultural environment, as well as from the needs of infrastructure and public safety. It is also the result accompanied with the improvement of people's awareness of

sustainable urban development. In other words, these areas essentially exist as the urban public goods. Therefore, besides the basic ecological protection function, the restrained construction areas contain a new meaning of public services.

A. Ecosystem Services and Natural Resource Reservation

At the ecological level, restrained construction areas achieve five ecological service function and effects, namely, ecological safety, ecological sanitation, ecological metabolism, ecological health, ecological integration, by making use of the five ecological service functions of supply, breed, adjustment, circulation and support [2]. Moreover, restrained construction areas offer a good natural habitat for the resources to conserve and prosper which contributes to the storage of the resources and establishes a solid material foundation for sustainable social development.

B. Recreation Activities and the Historical and Cultural Protection

At the social and cultural level, through reasonable land use, improved relating regulations and laws, and rewarding mechanism, restrained construction areas can be developed into green spaces of recreation activities for urban inhabitants. Besides, the delineation of the restricted area with important historical and cultural heritages that needs to be protected, will play an important role in the control of the surrounding environment of the heritage, and be beneficial for the protection of historical context.

C. The Spatial Strategy and Technical Risk Avoidance

In terms of space allocation, restrained construction areas have a significant impact on preventing urban sprawl and controlling special urban pattern, which will promote the compact development in the urban area, save the investment on the infrastructure and facilities, and stimulate the smart growth of the city. Furthermore, to a large extent, the establishment of the restrained construction areas takes the technical practicability and safety of the engineering into account, controls the risk of the nature disasters in this region, and at the same time protects the important infrastructure, contributing to the safety of the urban construction.

II. THE NECESSITY OF INTRODUCING GOVERNANCE INTO RESTRAINED CONSTRUCTION AREA

Currently, the urban development in China enters a new stage. The market is playing an increasingly important and even decisive role in the allocation of social resources, while the role

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of the government is gradually shifting from a high degree of intervention to appropriate guidance [3]. In the transition period of Chinese cities, the prosperity of the civil society has attracted a growing enthusiasm from various social forces to participate in the urban planning according to their own interest, for example different groups, non-profit organizations, non-government organizations, enterprises and cooperatives associations. As a public policy with the purpose of maintaining the public interest, urban planning has to keep a balance between the different demands of stakeholders. So do the special spaces, like the restrained construction areas.

A. The Complexity of Planning Actors and Stakeholders, and the Planning Physical Elements

The delineation of the restrained construction areas has significant meanings for the smooth and better development of overall urban space. As a public good serving the whole urban space, the planning area has a rich range of functions, which can be generally divided into ecological protection function, natural landscape function, historical and cultural function, and engineering function, etc. Meanwhile, the restrained construction areas not only exist as a spatial subject, but also are a combination of interests from many social actors and stakeholders who are living and working there, or closely connected to the areas. Like most general actors and stakeholders in the city, these actors and stakeholders are eager to guarantee their own development space, and to achieve their own rights and interest [4]. Thus the various and complicated actors and stakeholders in the planning together with the physical planning elements shape a huge gaming system in the planning restrained construction areas.

In this case, the traditional top-down spatial planning often result in a planning failure in the restrained construction areas, due to the conflict of different profits demands. One typical situation is when a group with a single economic profit destroys the bottom line of the public interest, such as the ecologically environmental protection, which has a negative impact on social and spatial environment. Another example is when people hold the static attitude of "one size fits all" towards the restrained construction areas, ignoring the various demands of profits from different actors and stakeholders, as well as the potential of diversified development based on meeting the public interests and urban strategies.

B. The Imperfect of Planning Regulations and Laws

The concept of Restrained Construction Area is first put forward in the national standard of Basic Terms Standards of Urban Planning revised draft (2005). Subsequently, both Urban Planning Formulating Methods (2005) and Urban and Rural Planning Law of the People's Republic of China (2008) propose that the contents of delineating restrained construction areas should be written in the urban master plans. Therefore, the delineation of restrained construction areas is not only an important part in urban planning, also has strict legislative meanings.

But currently, the planning of restricted areas mainly focuses on the zoning of the controlled area, most of which are made

based on ecological and technical requirements yet are lack of the analysis of the inner demand of interests in the restrained construction area [5]. The planning study usually stop at the level of zoning controls and establishment of the controlling indicators, which miss the guidance documents of more substantive guidance for spatial function distribution in the restrained construction areas.

C. The Practicability of the Planning Implementation

Generally, the delineation of the restrained construction areas and the establishment of the indicators are the result of the rigid requirements for environmental protection. However, the development demand of the actors and stakeholders, who are influenced by the planning, are hard to be considered reasonably and fully satisfied just according to these rigid requirements. Improper process of these interests from the actors and stakeholders is likely to produce a directly bad influence on the implementation of planning. Particularly in the area with a lot of relocation work, the former residents have to move from their homeland even to a very strange and unfavorable development environment, which always lead to the resistance of these residents and the failure of the planning. Consequently, based on the rigid indicator, the introduction of the flexible planning method with participation of the actors and stakeholders will definitely provide an effective way to realize the planning ideas and improve the practicability of the planning implementation.

In summary, the planning of restrained construction areas not only involves the rationality of the spatial distribution of different physical planning elements, but also makes an urgent request of a new planning method that can coordinate the multiple profits and make different actors and stakeholders participate in the process of planning and decision-making. Interestingly, the theories of governance put forward a new management method to integrate the dialogue, coordination and cooperation of the multiple groups for a maximized and efficient use of resources, which can complement the weakness generated by the market exchange and the governmental top-down adjustment and finally achieve a comprehensively "win-win" model of social governance [6]. This concept is worth introducing into the planning of restrained construction areas. So this paper will recommend a thematic study of restrained construction area planning based on the idea of governance, in the pursuit of providing a platform for effective governance in the restrained construction area [7].

III. OVERVIEW OF THE YANGZIJIN ECOLOGICAL RESTRAINED CONSTRUCTION AREA AND ANALYSIS OF ITS PLANNING ACTORS, STAKEHOLDERS AND PHYSICAL ELEMENTS

A. Overview of the Yangzijin Ecological Restrained Construction Area

The research area in this planning is located in the southern part of Yangzhou, namely, the center of High-tech Zone in Yangzhou (see Fig. 1). It is to the north of Yiyang River, in the east of Ancient Canal Yangzhou Section, to the west of Yangli Highway and on the south of Yangzijin Road, which is the urban restrained area established in the Yangzhou City Master

Planning (2012-2020). Besides, the high-tech zone in Yangzhou has been on the important stage of breakthroughs and innovations to change into the national level high-tech zone, the surrounding land of which has already been planned as the urban construction land to integrate the development of industry and city. Therefore, the protection and development of Yangzijin Ecological Restrained Construction Area plays an essential role in the Yangzhou's urban development pattern.

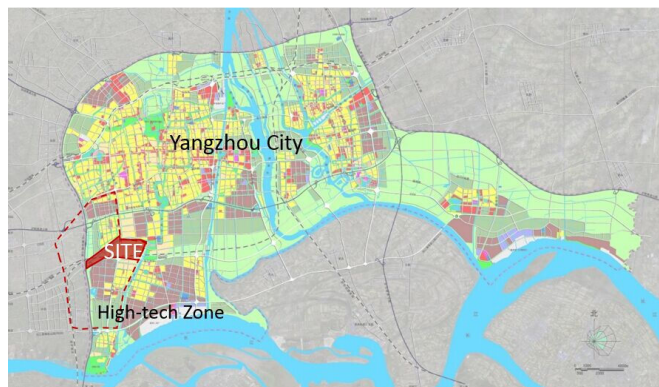


Fig. 1 The Site Location of Yangzijin Ecological Restrained Construction Area

With a good quality of ecological environment, rich landscape resource and Gaomin Temple of excellent cultural value, this restrained construction area possesses multiple attributes of ecological protection, natural landscape and historical, and humane heritage (see Fig. 2). Its total area is 572.01 hectare, of which villages and Gaomin Temple are the existing constructed area and the rest are arable land, woodland, gardens, ponds, wetland, and water area. In terms of the land use structure, construction area takes 11.18% of the existing land use, while non-construction area is 88.82%.



Fig. 2 The Current Situation in the Yangzijin Ecological Restrained Construction Area

B. Composition Analysis of the Actors, Stakeholders, and Planning Demand

In the preliminary period, this planning conducted an analysis of and a negotiation with all the actors and stakeholders involved in this project based on interviews, household surveys and questionnaires. The actors and stakeholders in this planning are consisted of the local government departments, local villagers, Gaomin Temple, Yangzhou citizens, tourists and developers.

(1) Local Government Departments

As the most influencing decision-making leader in the planning establishment, the government departments focus on seeking a balance of economic development, social progress

and environmental protection in the overall level. In the case of not exceeding the ecological limitation boundary in the restrained construction area, they hope to achieve a reasonable and effective configuration of land use, with the purpose of meeting the requirement of economic and social development and improving the overall spatial quality in this region.

(2) The Local Villagers

The local villagers are the group who are influenced directly by this planning. From their perspective of individual benefits, they desire to get more guarantee of their own developing space. Most of them wish to reserve their existing living area and improve the infrastructure, while the villagers who need to move hope to receive reasonable land compensation and expect the government to solve the employment issue [8].

(3) Gaomin Temple

Different from the local villagers, as a special social organization of religion, Gaomin Temple doesn't emphasize on the profits generated from the land. Instead they want to have a peaceful and quiet Zen space, far away from the troubles of the secular world.

(4) The Citizens in Yangzhou

As an important part of the Yangzhou Ecological Corridor, Yangzijin Ecological Restrained Construction Area shapes the urban ecological system in Yangzhou, which is closely connected with the citizens and their daily life in Yangzhou. Thus, these citizens would like to protect the Yangzijin Ecological Restrained Construction Area as an integrated part and avoid the construction projects and developments that are not environmentally friendly.

(5) The Tourists

Good natural environment is a great attraction to the tourists and Yangzijin Ecological Restrained Construction Area provides the citizens with a good place of becoming close and returning to nature. However, the not well designed primitive environment brings several inconveniences for these groups of tourists. For this reason, tourists request that this planning could properly develop and construct the land to provide more convenience for tourism and relaxing activities.

(6) The Developers

Aiming to maximize their own profits, developers are eager to obtain the use right of the land [9]. Because the abundant natural resource brings a lot of great opportunities for business and making profits, for example, the real estate developing projects. Actually, now several developers are discussing and negotiating with the local government for the possible project plans, such as several real estate projects and tourism leisure projects.

C. Analysis of the Conflicts between Actors, Stakeholders and Physical Planning Elements

It is natural that each actor and each stakeholder in the planning make the decision and consideration from their perspective to maximum their own profits. As a result, different conflicts are generated between actors, stakeholders and

physical planning elements. At the same time, it results in a benefit gambling between different actors and stakeholders.

Among them, the physical planning elements of Yangzijin are consisted of grassland and woodland, wetland and water system, arable land and gardening land, which are the ecological and environmental aspects of the restrained construction area, as well as the historical and cultural aspect of the restrained construction area including Gaomin Temple (see Fig. 3).

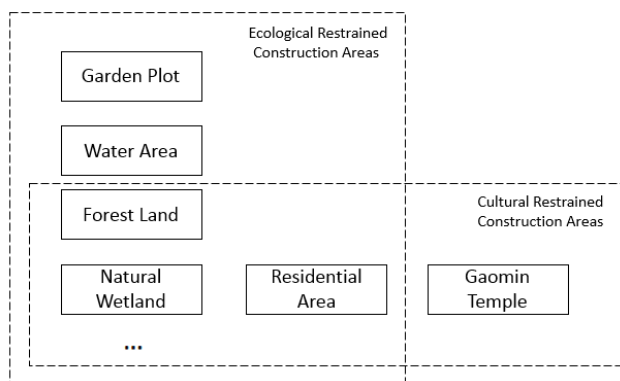


Fig. 3 Composition of the Physical Planning Elements in Yangzijin Ecological Restrained Area

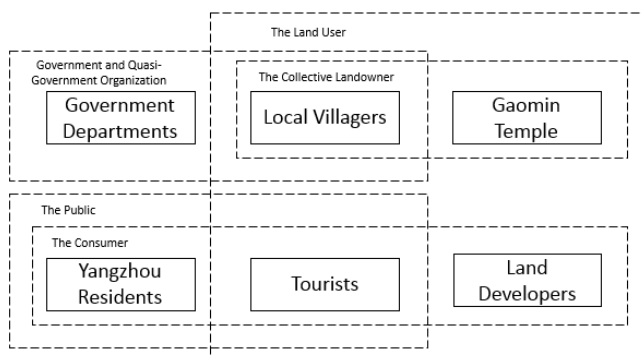


Fig. 4 Composition of the stakeholders in Yangzijin Ecological Restrained Area

According to the different attributions, the six stakeholders could be divided into five categories and then they overlap in certain area (see Fig. 4). Consequently, it produces a group of the government departments and the social public who have no direct connection with the land yet represent the public interest, and another group of land owners, land users and customers who are well connected with the land and represent the individual interest. The local villagers have played a rich and leading role in this process.

(1) The Conflicts between Planning Stakeholders and Physical Elements

In the planning and construction of Yangzijin Ecological Restrained Construction Area, ecological restrained construction area represents the environmental interest, while the cultural and historical restrained construction area indicates the social interest. Generally, the stakeholders having conflicts

with these two interests always demand protection of the living space, economic returns and consumption of the public products. Among them, as an essential component of the local government, on the one hand, villagers wish to increase the spatial value of the land thus obtain more economic profits; on the other hand, they want their living space to be reserved, improved and protected at the same time. For the other actors and stakeholders, both the government departments and developers hope to make better use of the land for a growing economic value. The main difference between them is that the government prefers to consider the issue and problems from a broader perspective of the overall urban benefits, while developers are only interested to realize their individual profits. What's more, tourists, as one part of the public composition, enjoy the right and benefit to consume public products, yet whose degree of consumption should not generate conflicts with the public profits.

Therefore, the current conflicts between different stakeholders could be divided into the conflicts among environmental profits, social profits, overall land efficiency, collective land efficiency, individual economic profits and individual consumption rights (see Fig. 5).

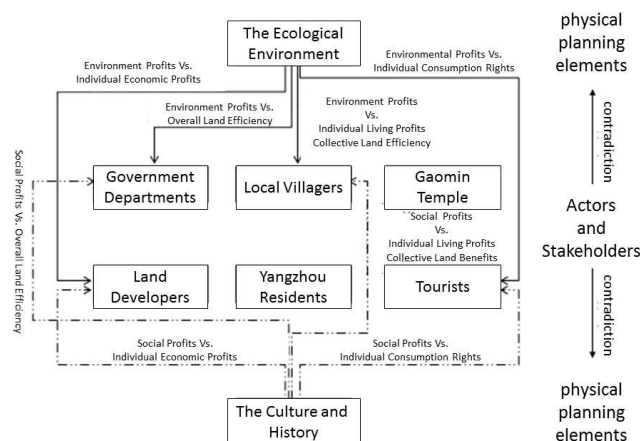


Fig. 5 Conflicts between Actors and Stakeholders' in the Yangzijin Ecological Restrained Area

(2) Conflicts between Different Actors and Stakeholders

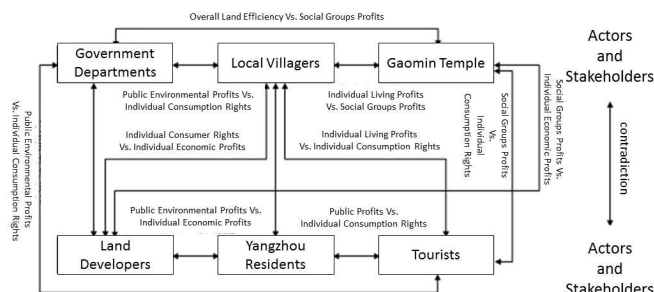


Fig. 6 Conflicts between Different Physical Planning Elements in the Yangzijin Ecological Restrained Area

The conflicts between different actors and stakeholders in this planning are the result from the intertwined individual profits, group profits and public profits [10]. Among them,

government departments and citizens in Yangzhou represent the public profits group, while Gaomin Temple is the representative of the religious group. Based on the individual profits, local villagers, developers and tourists have formed a complex conflict network between public profits, group profits and their mutual profits (see Fig. 6). There must be a planning of multi-dimensional flexibility which is indispensable for urban communities to cope with complicated socioeconomic changes [11].

IV. YANGZIJIN ECOLOGICAL RESTRAINED CONSTRUCTION AREA PLANNING

A. The Framework of Planning Theory

Based on the preliminary study and investigation of the

actors and stakeholders in this planning, in order to increase the implementation practicability of this planning, this thematic study of Yangzijin Ecological Restrained Construction Area, from the point of the actors and stakeholders, set up a planning framework of “actors and stakeholder --- physical planning elements, rigidity --- flexibility” based on the concept of governance. The rigid controlled zoning in this planning ensures to protect the ecological limitation boundary from destruction as well as to seek a balance between the different conflicts of actors, stakeholders and physical planning elements. Simultaneously, the flexible negotiation system and the establishment of project database are intended to coordinate the different actors and stakeholders, and solve the mutual conflicts between actors and stakeholders.

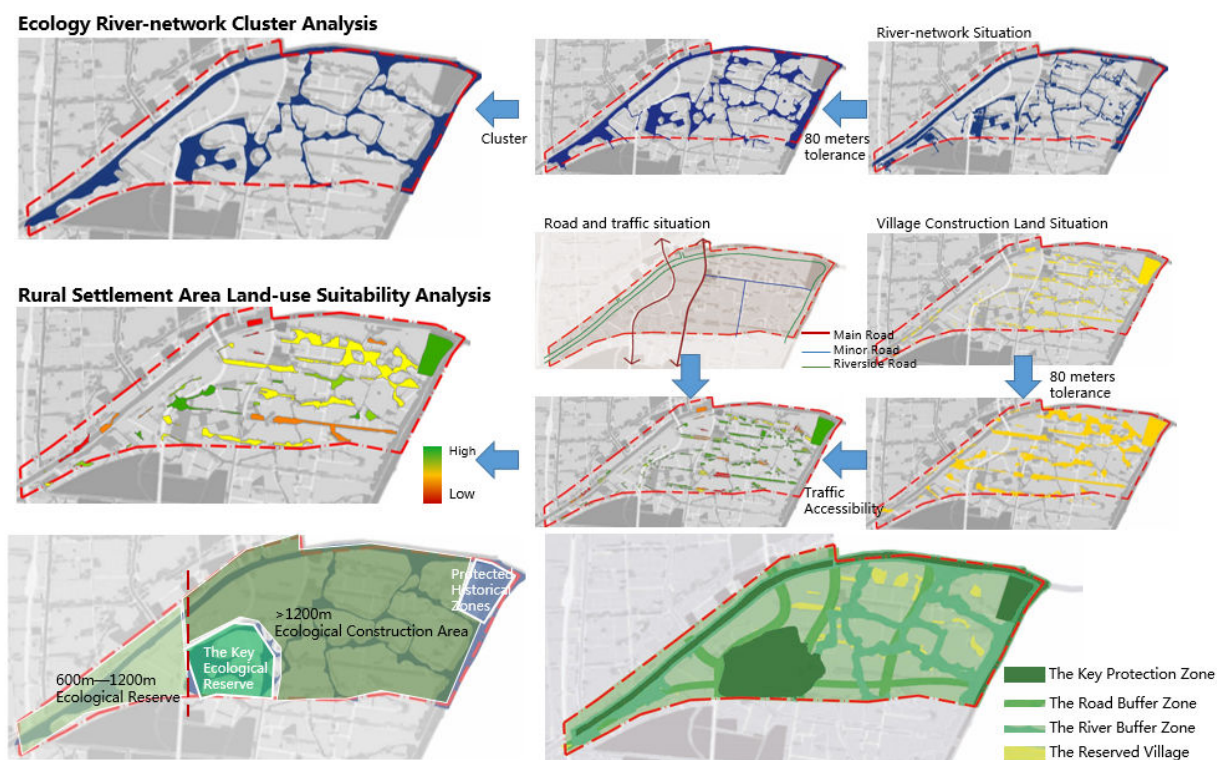


Fig. 7 Ecological and Cultural Factor Analysis in the Yangzijin Ecological Restrained Construction Area

B. Rigid Controlled Zoning in the Planning

By using the techniques of the software ArcGIS, this planning made a cluster analysis of the ecological factors and cultural factors, and conducted a suitability analysis of reserving the village land and its supporting facility land. Then the planning area has been divided into three kinds of restrained construction areas, namely, rigid restrained construction zone, general restrained construction zone and moderate developing zone (see Figs. 7, 8). First of all, rigid restrained construction zone is the key area in the Yangzijin Ecological Restrained Construction Area where exists the most urgent consideration and demand of environmental benefits, social and cultural benefits. More specifically, with abundant water system, good environment and a number of temples, this area requires to be

protected as an integrated part since it is demonstrated as a high value of ecological factor coefficient and cultural protection.

Secondly, there are a lot of built elements existing in the general restrained construction zone, like facilities, arable land, gardening land and ponds, which contributes to the complex conflicts among multiple actors and stakeholders. Therefore, this planning allows restoration or reconstruction of the existing houses in their places, and reservation of a certain amount of farming land in the case that these actions would not bring bad influence to the regional environment.

Finally, the delineation of the moderate developing zone enables this planning to meet the demand of economic development to some extent, reach a balance between governmental investment and return, and increase the use efficiency of the land. At the same time, this also provides more

opportunities for living space improvement and employment solutions, as well as creates a space for the urban citizens to get close to natural and cultural heritages. The selection of the moderate developing zone is conducted based on the analysis of transportation accessibility and construction land suitability, and under the principles of being far away from the rigid restrained construction zone and controlling its regional scale in a reasonable size which has enough space for the housing, small business and service industries (see Table I).



Fig. 8 Rigid Controlled Zoning in the Yangzijin Ecological Restrained Construction Area

TABLE I
 CONTROLLED ZONING IN THE YANGZIJIN ECOLOGICAL RESTRAINED CONSTRUCTION AREA

Controlled zoning	Type	Requirements	Construction controlling indicator			
			Building density (%)	Floor area ratio	Building height limitation (m)	Green ratio (%)
Core protection area of wetland	Rigid restrained construction	No projects are allowed to be constructed in this area. The built houses and farming land should be removed.	—	—	—	95
Core protection area of Gaomin Temple	General restrained construction	No new projects are allowed to be constructed in this area. This area will rearrange the existing village housing and farmland, restore the houses farmers want to reserve and give compensation to the moving farmers. A certain farming activities are allowed in this zone.	5	0.1	9	85
Buffer protection area of area of wetland		—	—	—	100	
Buffer protection area of Gaomin Temple		—	—	—	100	
Protection area along the Yangyi River	Moderate development	This area allows new construction projects and reservation of the existing village housing and farmland.	10	0.3	12	60
Protection area of the ecological corridor		—	—	—	100	

C. "Flexible" Project Database and Negotiation System

Under the guidance of rigid controlled zoning, the establishment of the project database in the divided zones will allow the relating actors and stakeholders to participate in the process of planning negotiation and project location selection. The main actors and stakeholders involved in this Yangzijin Ecological Restrained Construction Area Planning are government departments, local villagers, Gaomin Temple and developers, while the main forms of negotiation used are round table meeting, household interviews and questionnaire survey.

In the process of planning implementation, the government departments play a key role in the supervision and guidance, prohibiting the ecological limitation boundary from destruction. The local villagers will have the chance to participate in the management of the restrained construction area, and take a direct part in the construction and implementation of the chosen projects[12] In this way, their awareness of the family will be improved, which helps to the governance and protection of the environment in this restrained construction area. As a representative of the religious group, Gaomin Temple should make more efforts to strengthen the interaction with the villagers, cooperate in the construction of the temple Zen housing and temple Zen center, and improve the quality of villagers' life and regional development. Finally, the developers are not only the one focusing on the profit seeking to meet their own interest, but also they provide necessary fund and techniques to support the construction and maintaining of

this restrained construction area, which are the important factors for the successful implementation of this planning (see Table II).

V. CONCLUSION

Instead of the traditional restrained construction area planning which only emphasized on the simple framework of spatial distribution and configuration, this study of the Yangzijin Ecological Restrained Construction Area makes a deep exploration of the necessity and practicability of the profit balance in the inner region from the perspective of seeing urban planning as a public policy. The introduction of governance provides an effective way to solve the conflicts between the different demands of actors, stakeholders and physical planning elements, a result that ensures a complete urban ecological limitation boundary and achieves a balance between multiple actors and stakeholders. In terms of the whole urban space, the planning method that is used to establish an urban planning based on the analysis of the stakeholder demands brings numerous benefits to solve the planning conflicts. Through the work of effective governance comes the more reasonable and effective goals made in the establishment and implementation of the planning.

TABLE II
PLANNING PROJECTS DATABASE IN THE YANGZIJIN ECOLOGICAL RESTRAINED CONSTRUCTION AREA

Controlled zone division	Type	Project database	Negotiation participant
Core protection area of wetland	Rigid restrained construction	Nature Reserve Area Wetland park	Government departments Local villagers Developers
Core protection area of Gaomin Temple		Gaomin Temple Woodland, gardens and farmland Modern flowers and plants land Sport park Flower Exhibition Green corps planting base Green poultry breeding base	Government departments Gaomin Temple Local villagers Developers
Buffer protection area of area of wetland	General restrained construction	Modern flowers and plants land Woodland, gardens and farmland Farmhouse relaxing activities Farming experiencing activities	Government departments Local villagers Developers
Buffer protection area of Gaomin Temple		Temple Zen center Temple Zen houses	Government departments Gaomin Temple Local villagers Government departments
Protection area along the Yangyi River	Moderate development	Waterfront recreation park Waterfront landscape belt	Gaomin Temple Local villagers Developers
Protection area of the ecological corridor		Green corps planting base Green poultry breeding base Modern flowers and plants Woodland, gardens and farmland Housing area Holiday hotel Temple Market	Government departments Gaomin Temple Local villagers Government departments Gaomin Temple
Regional supporting buffer area		Agricultural products wholesale market Green farming products processing base Ecological and farming and forest researching base	Local villagers Developers

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