

# Design and Discussion over Green Ecological Rural Areas

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**ABSTRACT:** Green Ecological environment matters a lot for human being, and represents the human-oriented principle directly. As a sustainable development model, Green ecological new rural areas direct the way of building new rural areas and also is a major part of world ecological environmental protection. In this thesis, the author points out some problems about green ecology in the process of building new rural areas, sums up the new rural green eco-design requirements. Based on the practice of design in Wangnao new Village, Shahe city, Hebei Province, the author elaborates on the significance of green ecology for new rural areas development.

**KEYWORD:** Green ecological new rural areas; ecological low carbon; new energy; ecological landscape

## 1 INTRODUCTION

Resources shortage, environmental pollution and over-expanded pollution are the three major issues for human beings to confront with. Environmental pollution, particularly, is threatening human existence and survival. The good news is that green ecological design and sustainable development provides a solution for addressing environmental pollution and helps to build a corporate community. Therefore, to develop green ecological new rural areas has become a trend.

## 2 THE PROBLEMS OF GREEN ECOLOGICAL NEW RURAL AREAS

Although the green ecological new villages of our country is thriving in progress, there are also many problems. If these problems can't be solved in time, it will affect the new rural construction work. The main problems are as follows:

- (1) Serious shortage of regional features and cultural characteristics.
- (2) The design of low carbon is superficial.
- (3) The recycling measures of sewage and rainwater are not reasonable. Besides, the recycling measures of recalled water don't fully implement.
- (4) The configuration of shrubs is famine, which leads to the living vegetation volume is insufficient.

## 3 THE REQUIREMENTS OF THE GREEN ECOLOGICAL NEW RURAL CONSTRUCTION CONCEPT

### 3.1 *The design of road and garden road*

The design planning of new rural road should show the human-oriented idea. The design should be considered from the security, to achieve accessibility, safety, indivisibility of multilayered requirements.

### 3.2 *Plants design*

Plants grow in the way to fully adjust to local condition and consider of the base of greening groundwork, climate conditions, region difference and culture basis. And then choose the suitable plants. And people should choose the plants based on saving cost that have strong weather fastness, few plants diseases and insect pests and be benefit to human health.

### 3.3 *Accessorial building design*

The garden architecture and landscape in the planning design of new green ecological countryside has important value and effect. It can be further used to ornament environment, drive atmosphere, deepen artistic conception, which fully embody the humanistic color and cultural heritage.

### 3.4 The parking lot planning design

The design of parking lot in new countryside must have an appropriate amount and reasonable setting. It is benefit to optimize the environment, save land, and minimize the influences on residents. The design of parking space should reduce the air and sound pollution as much as possible without affecting the aesthetic of environment.

### 3.5 buildings' planning design

The shape and color of residential buildings is an important part of new countryside's landscape design. Green ecological residence should be located in natural environment. It's adaptation and influence of natural environment and itself should be considered fully during the design procedure green ecological residence's planning must protect environment, obey the principle of saving land[4].

### 3.6 The usage of new energy

Taking advantage of resources and energies and taking different measures is very important for design, which benefit to sustainable development. On the one hand, using the high-tech to maximize resource. On the other hand, developing new fuels.

## 4 THE PRACTICAL APPLICATION OF THE GREEN ECOLOGY

### 4.1 Road program ---- show unique ingenuity

The design of road program in Wangnao country combines with its current road situation, feature demand and so on. On the premise that content road safety, comfort economy, the road system of new countryside, second road is separated into main road, second road and walk road. Ramp and guard slope are designed according to terrain characteristic and side walk is set as narrow road, which come into contact with the whole district side walk and road way are combined closely. Rotary island can effectively reduce speed of vehicle and strengthen safety.



Fig 1 Village traffic



Fig 2 Roundabout traffic

### 4.2 Configuring Plants ---- Local conditions

Wangnao village garden plant configuration to construct ecological harmony, resource-saving new village for the task. Selection of the main plant configuration tree poplar, willow, pine, sycamore, linden trees. The main selection honeysuckle bush, holly, golden privet, lobular privet, purple leaf barberry, juniper and so on. Fujimoto main choice of roses, euonymus, wisteria, ivy, etc. Herbal main choice Feb. blue, white clover, bluegrass, tall fescue, gold doll Hemerocallis, iris, orchids, Pteris.

### 4.3 The arrangement of parking lots ---- exquisite and concise

There are for public depots existed intensively in the inner of Wangnao village. Three on the west, and one on the east, which are total of 61 parking spares. In addition, it's designed with afforesting in the internal and surrounding environment, setting up the right amount of grass trees and some sketch, which makes parking lots no longer drab and be harmony with the surrounding environment.

### 4.4 The design of architecture ---- low carbon and ecological

Combined with the requirements of the construction of new countryside and rural tourism, the new residents are coordinated with the ancient village style, but also has the modern style, which can also be used for visitor accommodation. Wangnao new village chooses new thermal to be used as the wall material of new dwellings, and uses double deck glass exterior doors and windows. The slope roof insulation Technology used on the roof measures the sealing of the roof, as well as adding thermal insulation layer.

### 4.5 Landscape construction ---- The coordination of the Mountain and the River

On the basis of the natural condition of Wang Nan new village, the project adopts the landscape system which combines zone, nucleus, circle, axle, node, that is "One district, one belt, two nucleuses, two corridors, four axial lines, six scenic spots."

(1) "One district" refers to the public landscape district which locates in the two sides of the main entrance of the village's western district.

(2) “One belt” refer to the green landscape belt near the river. The project requires to plant trees along the southern part of the flood intercepting trench, which is to be located along the North of the western part of the village, so that it will coordinate with the Northern landscape of the landscape park, forming a green landscape belt that half encircles the village.

(3) “Double Nucleus” is made up of Terrace Park and Landscape Park in the West District. Terrace Park is located in the northwest of the West District in the village. which is a miniature of local landscape. Landscape Park lies in the east of West District. This park helps to protect and remodel the mountainous resources.



Fig 3 Pool



Fig 4 Landscape Park

(4) “Two corridors” -- the corridors are located along the border of the dwelling district at the new village of Wangnao. One is used for greening including two parts in the east and west zone respectively. The other is scenic one which constructed along the ringlike pavement at the center of the new village’s west zone.

(5) “four axial lines” -- the scenic lines constructed along the principle roads in the east and west zones.

(6) “six scenic spots” -- the greening garden plov in the vicinity of houses. Standing beside the roads in the new village. Six scenic gardens which is based on the inconstructable zones and the vacant fields that separate the houses apart, combined with corridors and kernel green landscape together from the organic and ecological greening land system.

#### 4.6 The use of new energy ---- environmental friendly.

##### 4.6.1 the use of solar power

According to the different degree of solar power’s use, China could be divided into five parts. Shahe

belongs to the second lever. The total amount of received solar radiance is equal to the energy released by burning 200-230kg standard coal. If is no exaggeration to say that the new village of Wangnao possesses the abundant solar resource. The measures to use the energy can be summarized as follows.

1) Mounting the solar water heat on roof.

2) Adapting the solar lighting system in the new houses.

3) Yielding the solar equipments to light the landscape.

##### 4.6.2 The use of marsh gas

The equipments of marsh gas would be developed collectively in the north-eastern part of the village to change the range of burning materials chosen by the inhabitants.

#### 4.7 Style introduction of village construction ---- unique and distinctive

Wangnao village is located in the Taihang Mountain region with large number of stones. Thus the construction could be built with the advantage of the village, a place filled with honored stone culture. Placing the scenic stores and steps, fence, tables and stool made by stones adorns the landscape. Embedding the abundant red stone embellishes the buildings. Then the artistic quality of the construction material was appeared and the beauty of materials could energy.

## 5 CONCLUSION

The 21 century is a century which emphasises on people, emphasises culture, emphasises the integration of human and nature, emphasises the overall sustainable development. Green Ecological New Countryside is a kind of living mode of human, a form of sustainable development, a thinking to solve the practical problems. It follows the design principle which takes people as center and creates a self willed of activity space to achieve the sustainable development of countryside.

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