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Win-win of Nature, Culture and Economy in Poverty Minority Area: Urban Design in Enshi, China

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CONTENT AND CONTEXT OF THE PROJECT

Overview of Enshi Tujia and Miao Autonomous Prefecture

- Located in the valley surrounded by mountains in the western China
- Famous for its Enshi Grand Canyon and Tujia and Miao minorities’ settlements
- A typical one of the fourteen extreme poverty areas in China
CONTENT AND CONTEXT OF THE PROJECT

Current Issues

Urgent demand of regional poverty alleviation:
- The autonomous prefecture government proposed the Enshi Urban Development Plan
- The plan stipulates 65 square kilometers of construction land, including a large number of manufacturing areas districts.

Serious environmental and cultural issues:
- Topographic features were destroyed
- Streams were polluted
- Environment were deteriorated
- The ecological civilization of Tujia and Miao minorities for centuries were destroyed

VS

Previous Urban Development Plan

Environmental issues occured during the past development

Polluted rivers and streams

The levelled hills

The filled valley

The city lost its ethnic characteristics
MAIN FEATURES OF THE PROJECT

1. Adopts the Low Impact Development Mode

- Recognizes the valleys space in red hills region which represents a particular characteristic in Enshi’s urban landform

- Different from original construction which always levelled the hills, filled the valley and blocked the stream, the project adopts the gap development mode with low impact on the ecological environment

- Delimited different construction areas and formed corresponding guidelines to conduct implementation of the gap development mode
1. Adopts the Low Impact Development Mode

- Follow the different construction areas’ corresponding guidelines to conduct implementation of the gap development mode.

- Concentrated construction area of flat land
- Enlarged open space node
- Both sides of the exit node
- Mountain view visual gallery
- Suitable construction areas of red hills region
- Current hilly terrain Square road
- Right mode 1
- Right mode 2
- Aerial view of Fengyu Bridge
- Aerial view of the Toast City

Construction guidelines of characteristic valleys
MAIN FEATURES OF THE PROJECT

2. Alleviate the Haze and “Urban Heat Island” Effect

- Simulates and evaluates the outdoor wind environment in Enshi through the scSTREAM software
- Proposes urban form and architectural layout optimization strategies from the three levels of “city-group-block”

General situation of wind environment

10m height annual mean wind speed map of Enshi and surrounding areas (1986-2016)

Technical route and analysis process

- Wind environment simulation of natural terrain
- Wind environment simulation of the master plan
- Wind environment simulation of this urban design

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At the block level, a reasonable layout and spatial form guidance of buildings are proposed based on wind environment optimization strategies.

At the group level, guides the layout of buildings in each group to form a “pyramid-shaped” height distribution pattern, and set the central green space in each group.

2、Alleviate the Haze and “Urban Heat Island” Effect

At the urban level, built seven ventilation corridors on the respecting the existing urban pattern and buildings, and delineates the sensitive areas, transition areas and general control areas of ventilation corridors and forms the control guidelines.

The sensitive areas, transition areas and general control areas of ventilation corridors are delineated, and the control guideline is formed.
MAIN FEATURES OF THE PROJECT

3、Revive the Vanishing Local Lifestyle and Ethnic Customs

- Retains the original valleys and villages which include the typical elements in Enshi — stream, field, house and hill

- Urban agriculture and country house are developed based on the local specialties—with only few subsidies from government

- Bring in an additional income of RMB 30,000 (equivalent to 60% of the previous annual income) in last year

Before

After

Renovation design of local settlements
MAIN FEATURES OF THE PROJECT

3. Revive the Vanishing Local Lifestyle and Ethnic Customs

- Restore a large number of bridges, landscape towers, pavilions, and squares with stage plays to provide several public spaces with local characteristics
- Finds local carpenters, trains the local minorities and organizes a traditional construction company.
- The construction guidelines formulated in the project were written into the government work report and subsequently developed to a legal document.
FUTURE PROJECTS AND CONCLUSIONS

- In response to the ecological damage and loss of minority culture caused by the pursuit of rapid economic growth in one of the impoverished mountainous areas of western China, Enshi, the project revises the original urban development plan and launches a series of urban design strategies to achieve a win-win situation for economic growth, natural protection and continuation of minority culture.

- Nowadays, the positive effects of the project appear: further destruction of the valley space has prevented, the living conditions of ethnic minority residents are improved, the appearance of a city with ethnic customs are demonstrated. It also increases the attraction to tourists from all over the world. The number of tourists increased by 18% compared with last year, as well as the income from tourism increased 20%. The region is gradually getting out of poverty and setting a good example for the development of poverty-stricken areas in mountainous city.

- The project could be a value example to other developing countries and regions.

REFERENCES

1、The Master Plan of Enshi City (2011-2030)
2、The Mountain Protection Plan of Enshi City (2014-2030)
3、The Historical and Cultural City Protection Plan of Enshi City (2011)
THANK YOU