



2018 ISOCARP AWARD FOR EXCELLENCE

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



Located in the valley surrounded by mountains



China's main mountain map



Tujia and Miao minorities

CONTENT AND CONTEXT OF THE PROJECT

Current Issues

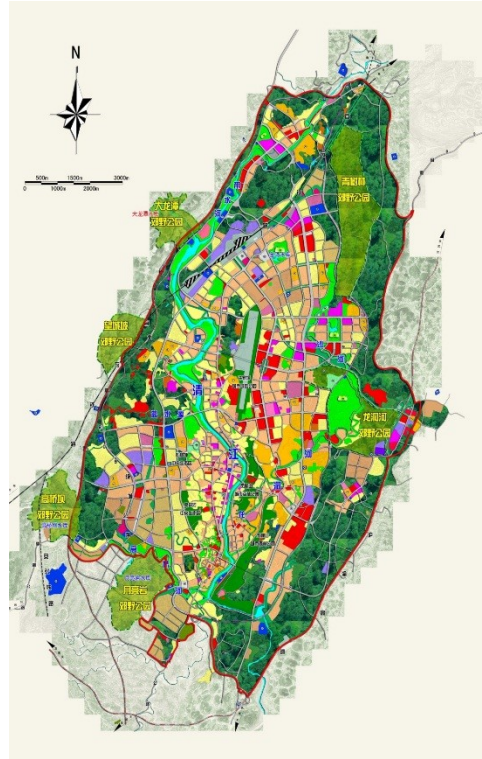
Urgent demand of regional poverty alleviation:

- 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.

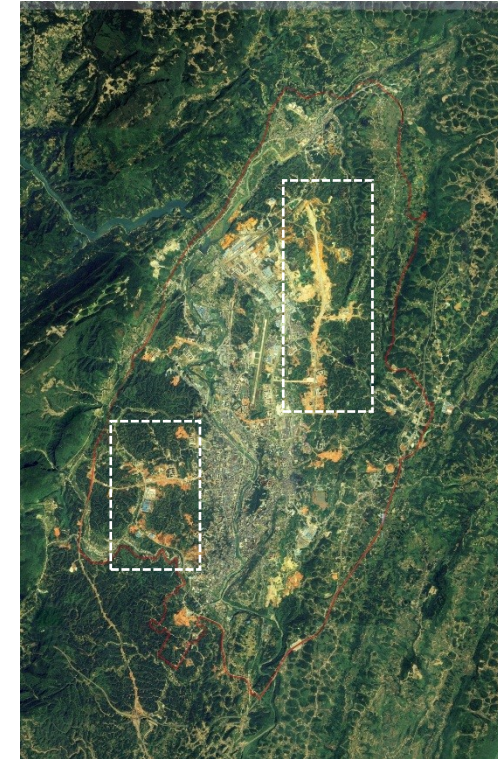
VS

Serious environmental and cultural issues :

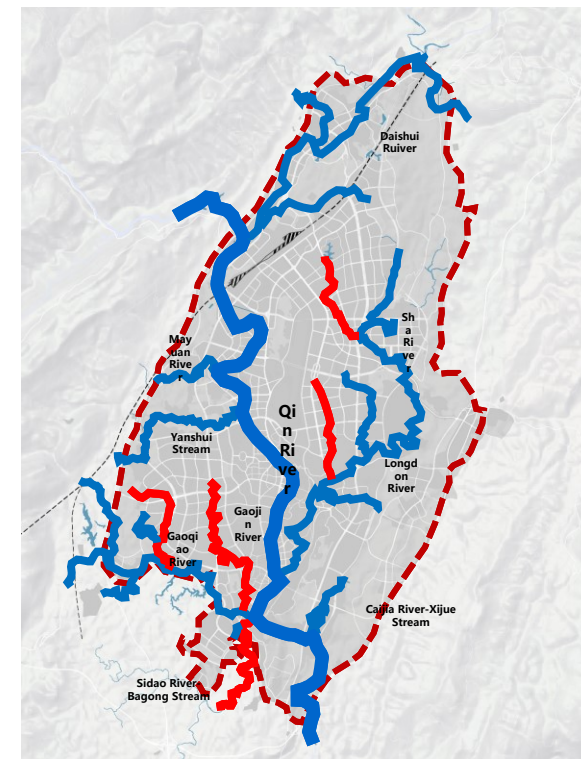
- Topographic features were destroyed
- Steams were polluted
- Environment were deteriorated
- The ecological civilization of Tujia and Miao minorities for centuries were destroyed



Previous Urban Development Plan



Environmental issues occurred 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



Photo of Yanshui Vally



Characteristic valleys space in red hills region

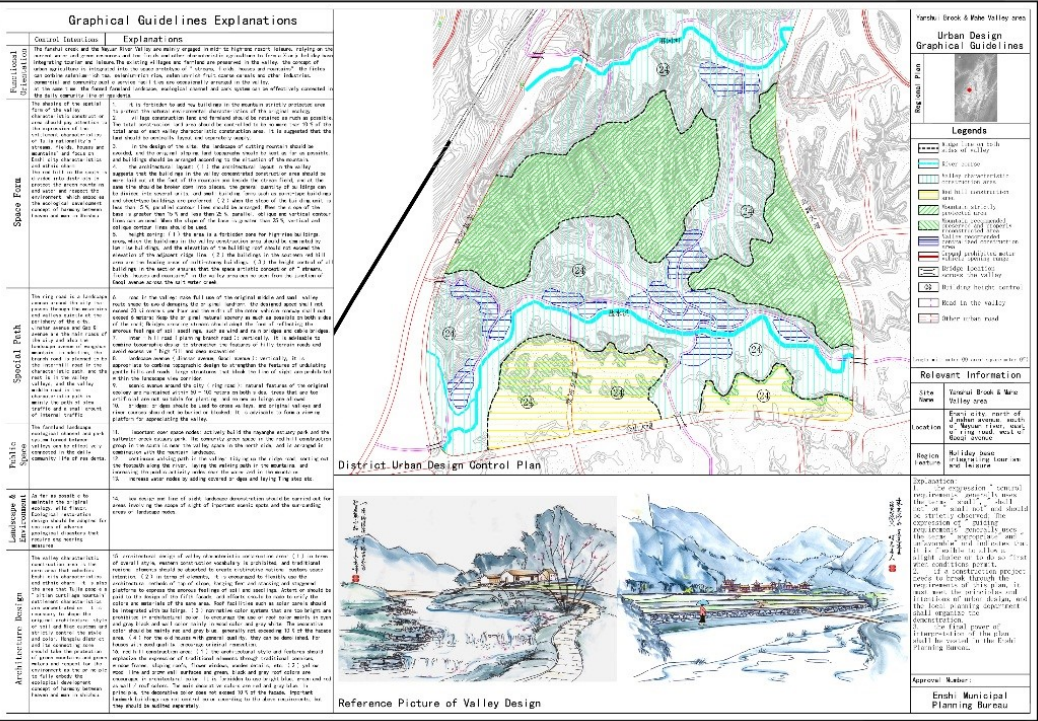


Gap development mode

MAIN FEATURES OF THE PROJECT

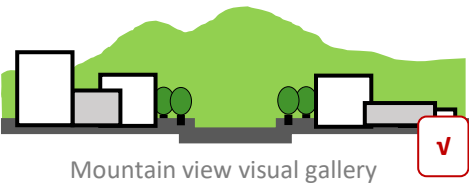
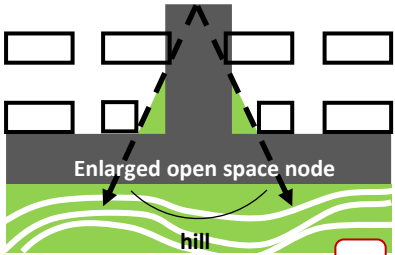
1、Adopts the Low Impact Development Mode

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

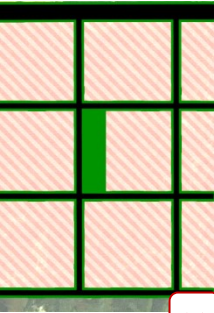


Construction guidelines of characteristic valleys

Concentrated construction area of flat land



Suitable construction areas of red hills region



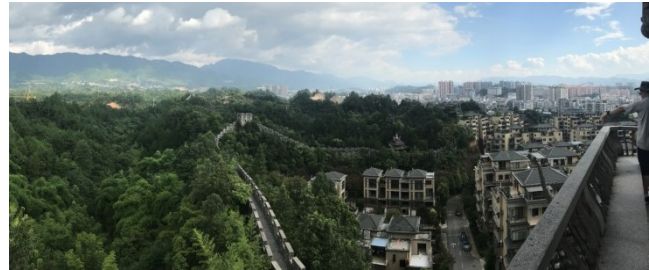
Current hilly terrain Square road

Right mode 1

Right mode 2



Aerial view of Fengyu Bridge



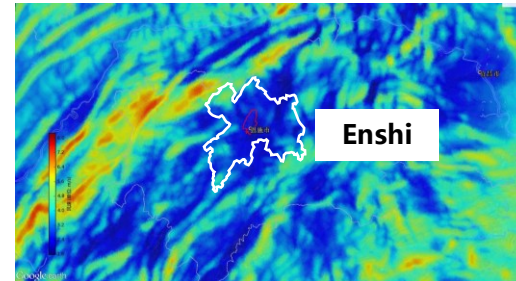
Aerial view of the Toast City

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



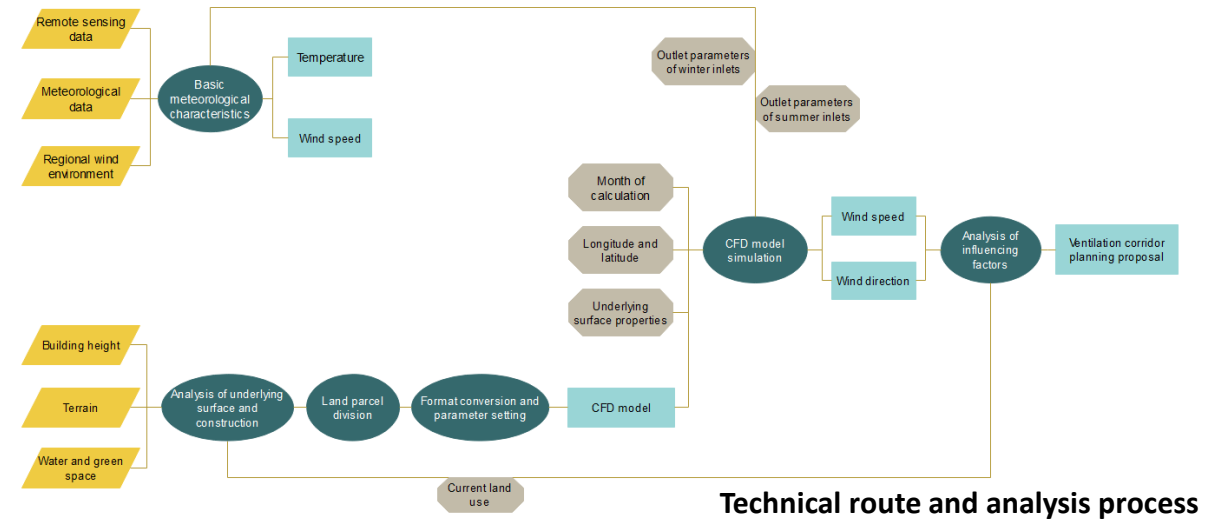
10m height annual mean wind speed map of Enshi and surrounding areas (1986-2016)



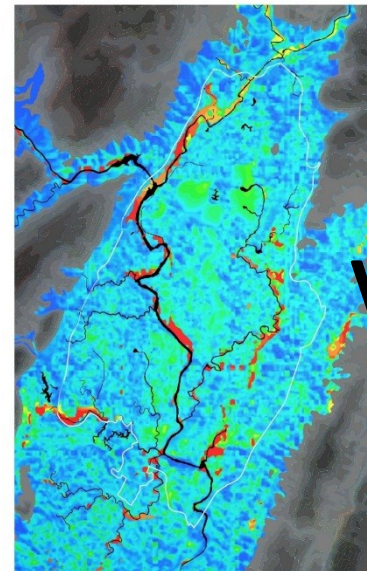
3DMAX Models



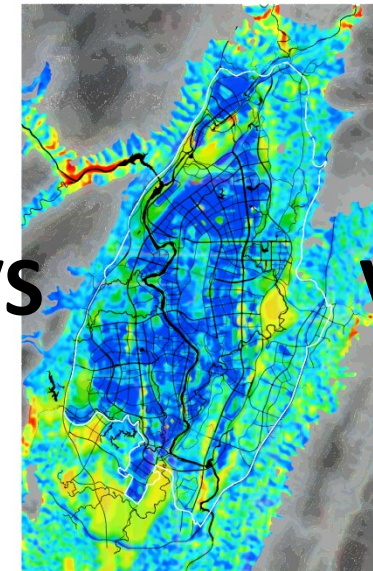
Computing grid in scSTREAM



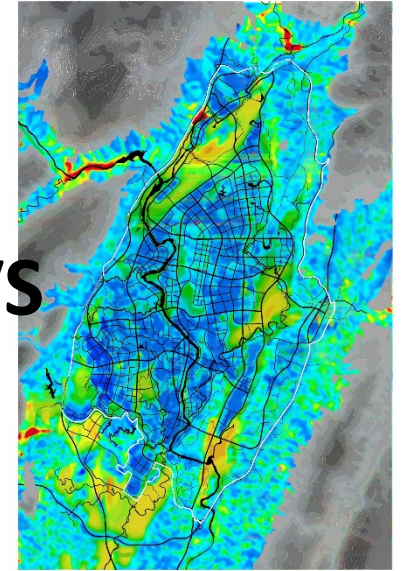
Technical route and analysis process



Wind environment simulation of natural terrain



Wind environment simulation of the master plan



Wind environment simulation of this urban design

VS VS

The map illustrates the spatial distribution of land use and land cover in the study area. The central urban area is characterized by a grid pattern and is divided into three zones: Sensitive area (red), Transition area (orange), and General control (yellow). The surrounding areas are predominantly green, indicating forested or undeveloped land. The map includes a north arrow and a scale bar.



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

- ways of ventilation.
- ms the control guidelines.
-
- 远郊 近郊 城市 近郊 远郊
- 水 陆
- 山顶冷风
- 公园 绿地
- 30m
- $\alpha < 30^\circ$
- 通风廊道方向
- 过渡率主导风向
- Bottom of building
- well ventilated bottom overhead part
- a
- 1 2 3
- Bottom overhead part
- No bottom overhead part
- Overhead ratio $k = \frac{a_1 + a_2 + a_3}{a} \times 100\%$

$$\text{Overhead ratio } k = \frac{a_1 + a_2 + a_3}{a} \times 100\%$$

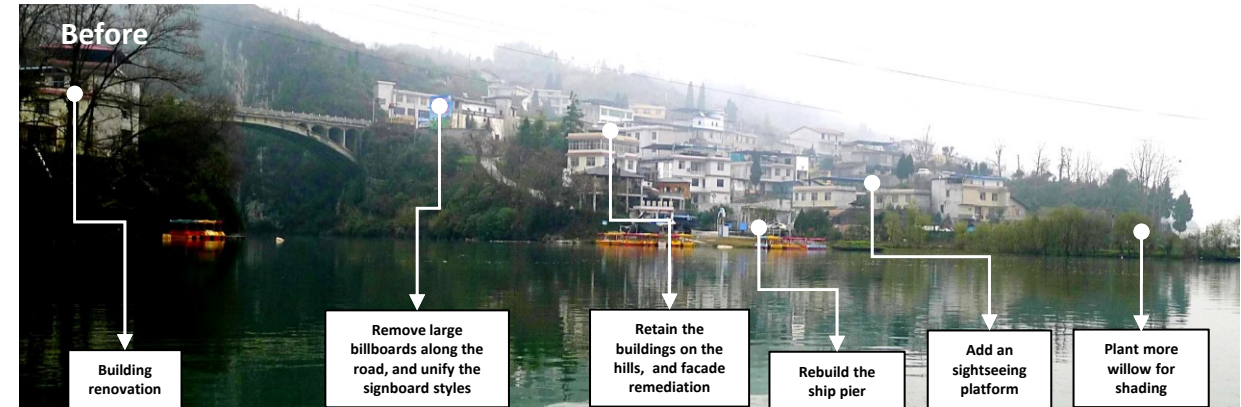
MAIN FEATURES OF THE PROJECT

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



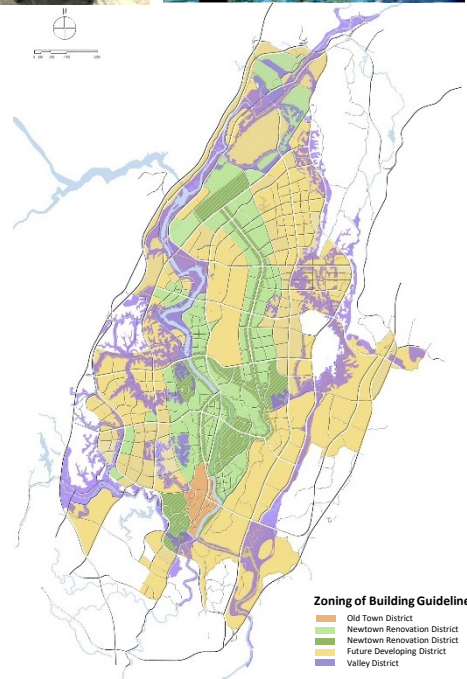
MAIN FEATURES OF THE PROJECT

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



- The construction guidelines formulated in the project were written into the government work report and subsequently developed to a legal document

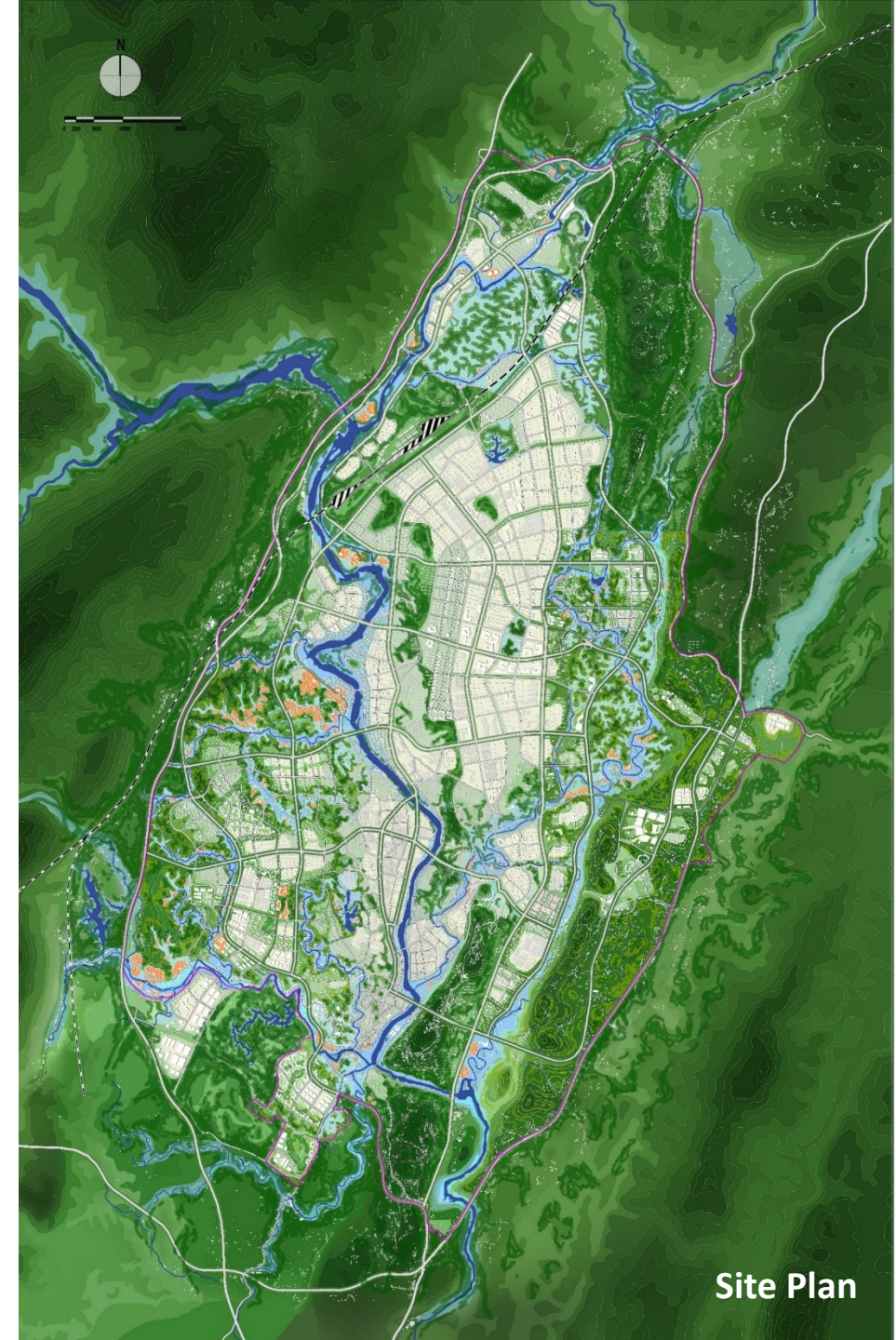


- Finds local carpenters, trains the local minorities and organizes a traditional construction company.



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.



Site Plan

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



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