

IFLA AAPME Awards 2024

Award Categories - Analysis and Master Planning Category

PROJECT BINDER

**“Landscape Planning of the Tourist Highway around Tropical Rainforest  
National Park”**

HAINAN, CHINA

Project Name : “Landscape Planning of the Tourist Highway around Tropical Rainforest National Park”  
Project Address : surrounds the outer edge of the Hainan Tropical Rainforest National Park  
City & Country : HAINAN,CHINA  
LENGTH(km) : 463.07 kilometers  
Year of Completion : 2022  
Award category : Analysis and Master Planning



PROJECT STATEMENT

Based on the backdrop of Hainan Province's eco-oriented development, transportation development, and the construction planning of the Tropical Rainforest National Park, the tourist highway, as a major infrastructure project in Hainan, serves as an effective way to promote and advertise National Parks. The project was designed with the core of ecological protection and a planning approach that ensures the harmonious integration of economic, social, and environmental benefits. Firstly, the project strengthens the connecting role of the highway, supplementing basic services externally and serving as a protective barrier for the core area internally, building a rescue corridor for wildlife and enhancing the ecological resilience of the tropical rainforests. Secondly, with green development as the core, the highway should be a carrier for promoting the culture of National Park and constructing the Hainan Tropical Rainforest Tourism brand. Finally, by coordinating the development pattern of new industries, high-quality and distinctive stops are built to create popular hotspots, attracting tourists to the central region and utilizing tourism flows to promote sustainable local economic development.



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Background



The travel road around the hinterland of Hainan Province, China, circles the outer edge of the Hainan Tropical Rainforest National Park. The total length of the route is 463.07 kilometers, connecting 9 cities and counties around the Tropical Rainforest National Park. The design content of this plan includes landscape stations and nodes along the road. The construction standard is mainly based on second-class/third-class highways, and the local restricted sections adopt the fourth-class highway standard.

# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tropical Rainforest National Park features



### RARE SPECIES

Hainan Tropical Rain Forest is an important area for the conservation of tropical biodiversity in our country, which was known as “The gene bank of tropical northern margin organisms”.  
With National Class I protected animals 8 species, Hainan Gibbon is the only global distribution, and 67 species of class II, 33 endemic species of Hainan.



### RAINFOREST INDIGENOUS

In the lush mountains and forests of Hainan Tropical Rain Forest National Park, the rain forest nations, represented by the Li people and Miao ethnic groups, have formed a unique and splendid “Rain forest culture”, which co-exists and thrives with the tropical rain forests of Hainan and South China. Before modern times, the Miao and Li people lived in the mountains and streams of the tropical rainforests of Hainan. They believed in animism and totem worship.



### PLANT RESOURCES

tropical rainforests are located around the globe, where hydrothermal conditions are most favorable, attracting a multitude of species to thrive, so the competition for light and living space becomes fierce. In addition to forming a complex multi-level structure in the vertical direction, there are ten wonders of the rainforest.

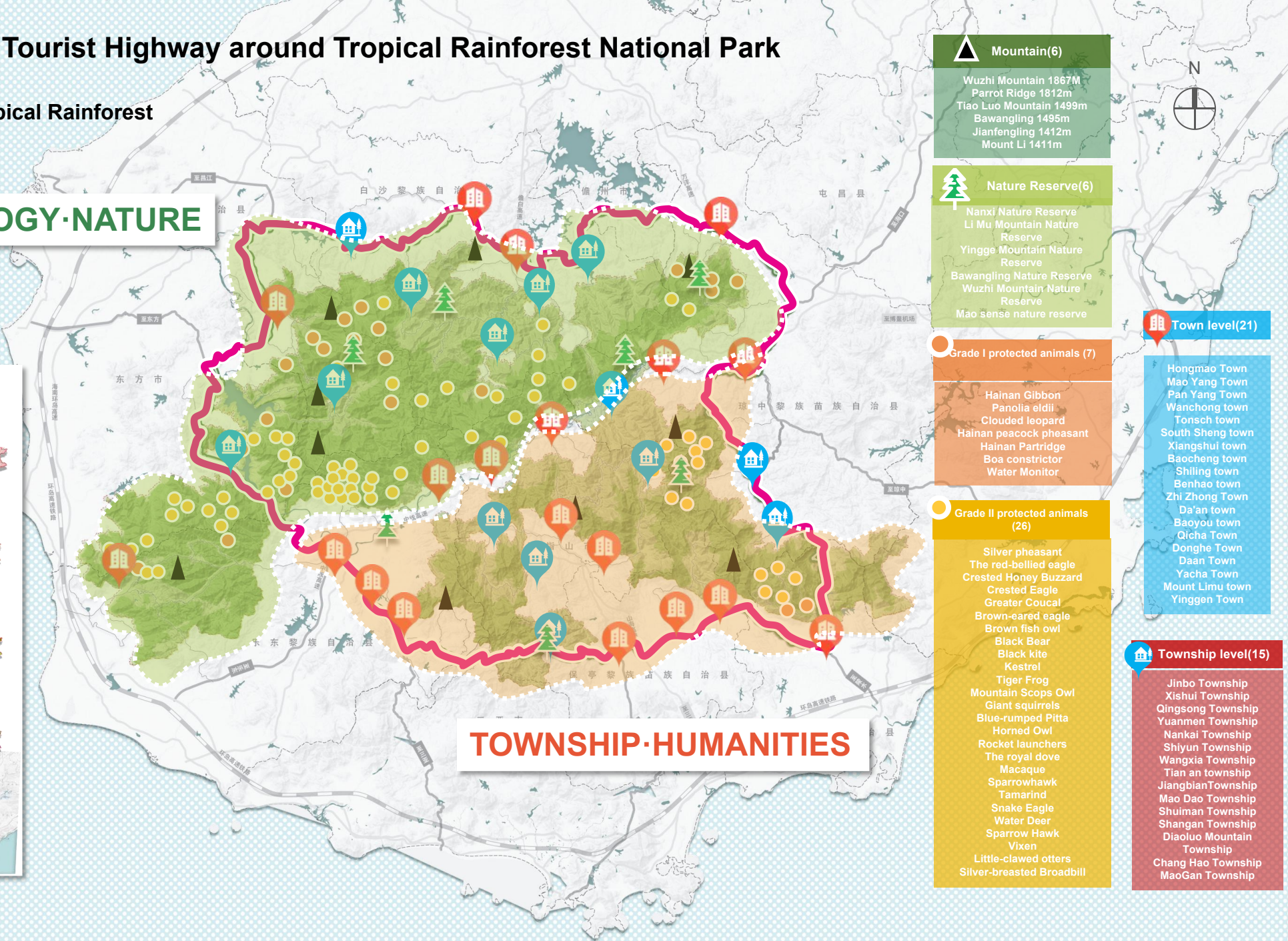
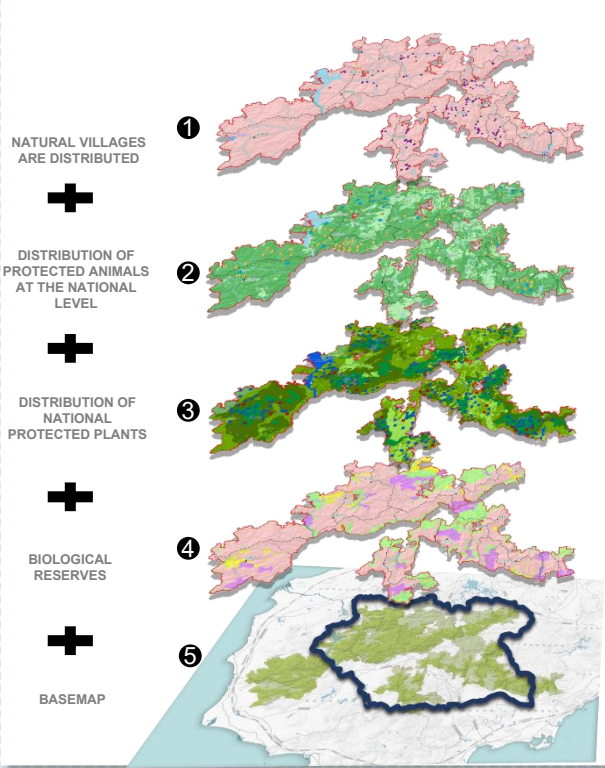




# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Distribution of resources within Tropical Rainforest

### ECOLOGY·NATURE



#### Mountain(6)

Wuzhi Mountain 1867M  
Parrot Ridge 1812m  
Tiao Luo Mountain 1499m  
Bawangling 1495m  
Jianfengling 1412m  
Mount Li 1411m



#### Nature Reserve(6)

Nanxi Nature Reserve  
Li Mu Mountain Nature Reserve  
Yingge Mountain Nature Reserve  
Bawangling Nature Reserve  
Wuzhi Mountain Nature Reserve  
Mao sense nature reserve

#### Town level(21)

Hongmao Town  
Mao Yang Town  
Pan Yang Town  
Wanchong town  
Tonsch town  
South Sheng town  
Xiangshui town  
Baocheng town  
Shilling town  
Benhao town  
Zhi Zhong Town  
Da'an town  
Baoyou town  
Qicha Town  
Donghe Town  
Daan Town  
Yacha Town  
Mount Limu town  
Yinggen Town

#### Grade I protected animals (7)

Hainan Gibbon  
Panolia eldii  
Clouded leopard  
Hainan peacock pheasant  
Hainan Partridge  
Boa constrictor  
Water Monitor

#### Grade II protected animals (26)

Silver pheasant  
The red-bellied eagle  
Crested Honey Buzzard  
Crested Eagle  
Greater Coucal  
Brown-eared eagle  
Brown fish owl  
Black Bear  
Black kite  
Kestrel  
Tiger Frog  
Mountain Scops Owl  
Giant squirrels  
Blue-rumped Pitta  
Horned Owl  
Rocket launchers  
The royal dove  
Macaque  
Sparrowhawk  
Tamarin  
Snake Eagle  
Water Deer  
Sparrow Hawk  
Vixen  
Little-clawed otters  
Silver-breasted Broadbill

#### Township level(15)

Jinbo Township  
Xishui Township  
Qingsong Township  
Yuanmen Township  
Nankai Township  
Shiyun Township  
Wangxia Township  
Tian an township  
JiangbianTownship  
Mao Dao Township  
Shuiman Township  
Shangan Township  
Diaoluo Mountain Township  
Chang Hao Township  
MaoGan Township

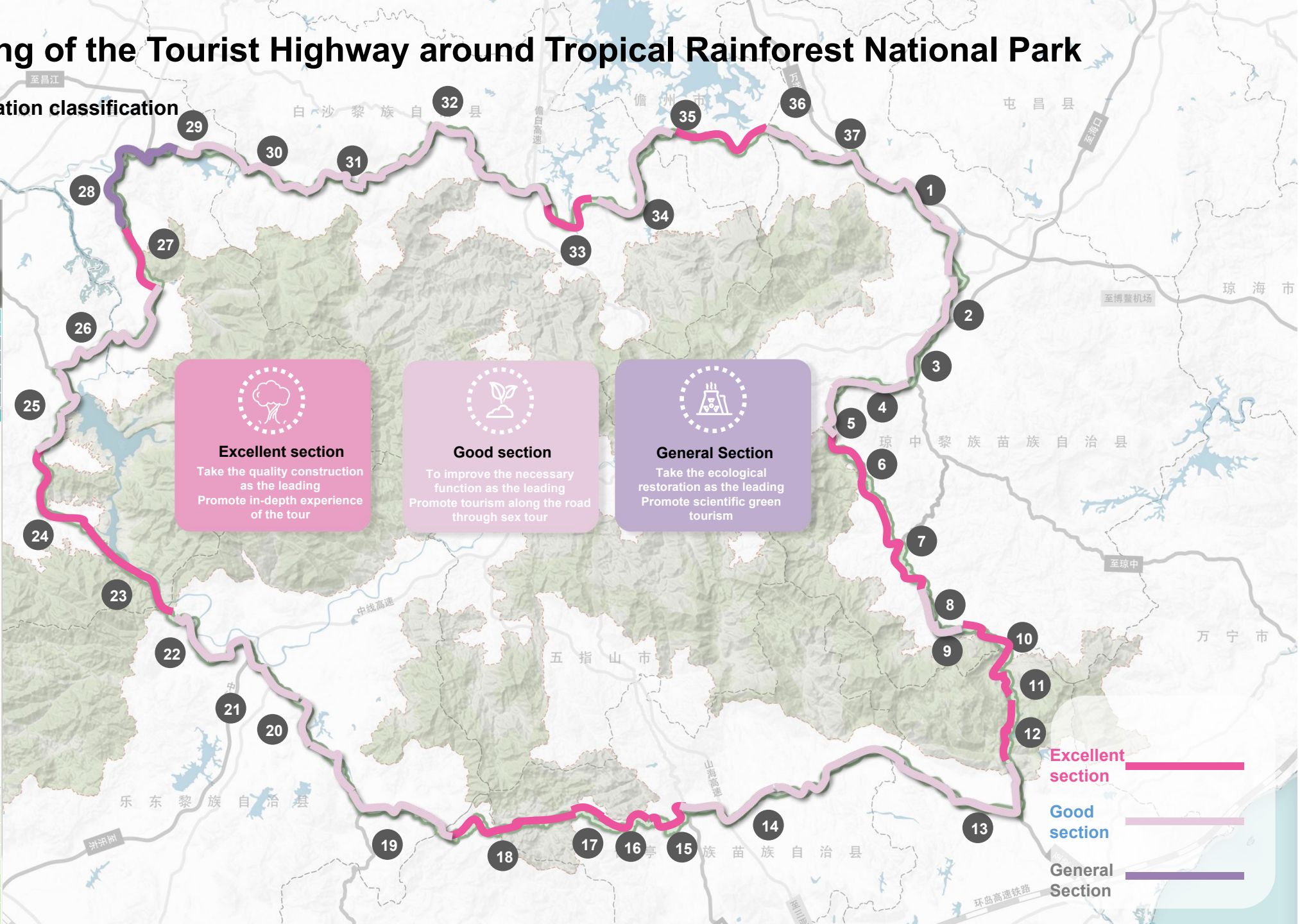
### TOWNSHIP·HUMANITIES



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

The whole line resource evaluation classification conclusion

Evaluation criteria				
Visual quality of ecological landscape		Driving Comfort		Network heat
Evaluation factor weights				
number	Criteria		Indicator	
1	Ecological landscape visual quality	0.7	Vivid	0.42
			Integrity	0.3
			Harmonious	0.28
2	Driving comfort	0.15	Road comfort	1
3	Network heat	0.15	Flow factor	1
number	Criteria	Indicator (definition)	Grade	Grading criteria
1	Ecological landscape visual quality	Vivid Landscape elements (such as terrain, vegetation, water, man-made, etc.), the clarity, dominance and contrast of the composition of the visual impression, the viewer will create a degree of memory and memory.	9	The landscape is extremely vivid and striking, creating a visually unique and memorable impression.
			7	The landscape is very attractive and impressive.
			5	The view is good, creating a pleasant impression of visual comfort.
			3	The landscape is not bad, and the impression can be seen everywhere in Hainan.
			1	The landscape is so ordinary that no impression can be made.
		Integrity It refers to the sense of wholeness, continuity and integrity of the natural and man-made landscape along the highway, which can form a certain thematic characteristics rather than fragmentary scenes.	9	In the visual landscape is extremely complete, there is no prominent elements to interfere with the integrity.
			7	In the visual landscape has a very complete, only a few prominent elements interfere with its integrity.
	Ecological landscape visual quality	Harmony It refers to the combination of the elements of the whole landscape environment, which is compatible, harmonious and pleasant, or interesting from contrast but balance.	5	It is highly integrated in the visual landscape, with some prominent elements interfering with its integrity.
			3	In the visual landscape has the moderate integrity, which has some prominent elements to interfere with its integrity.
			1	In the visual landscape has a very obvious incompleteness.
			9	Extremely harmonious and condensed into one, constitute a visual extremely harmonious rare experience.
			7	The landscape is harmonious and constitutes a laudable and enjoyable visual experience.
			5	Still called coordination, but not enough to constitute a unique visual impression and pleasant feeling
2	Driving Comfort	Road Comfort	3	They can barely be united, but they can not produce pleasant feelings.
			1	Extremely discordant, producing unpleasant feelings.
			9	The road is smooth and in excellent condition.
			7	The road is smooth and in good condition.
			5	The road surface smoothness general, general road conditions.
			3	The road is not smooth and in poor condition.
3	Network heat	Discussion on major social media platforms (Little Red Book, Weibo public comments, wasp nest)	1	Poor road flatness, poor road conditions.
			9	High degree of discussion
			5	The discussion was general
			1	Low level of discussion









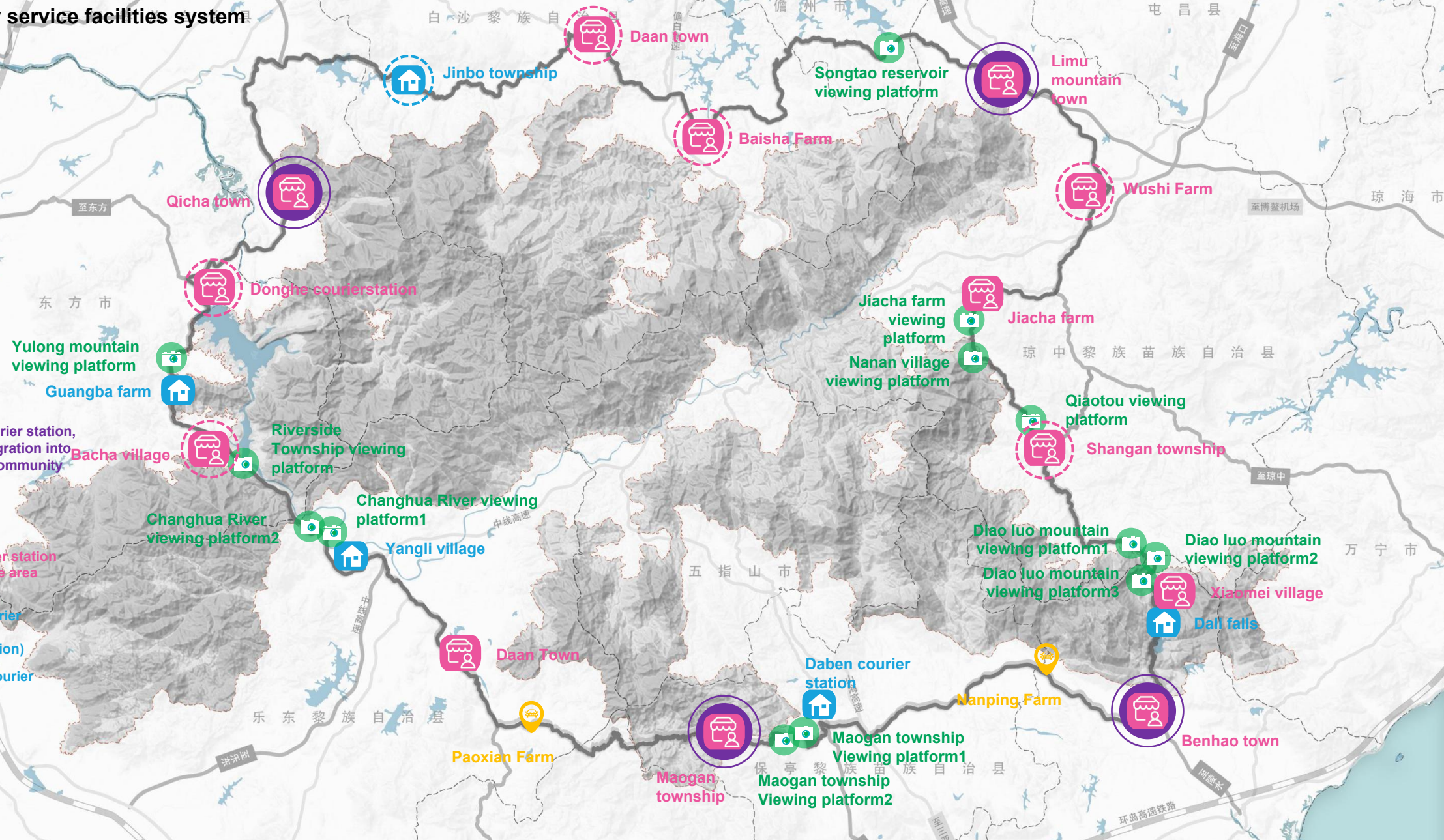


# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tourism Highway service facilities system

### Legends

-  First-class courier station, long-term integration into the entrance community
-  First-class courier station (including service-area function)
-  Second-class courier station (including service-area function)
-  Second-class courier station
-  Viewing platform
-  Parking Area





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Design Concept

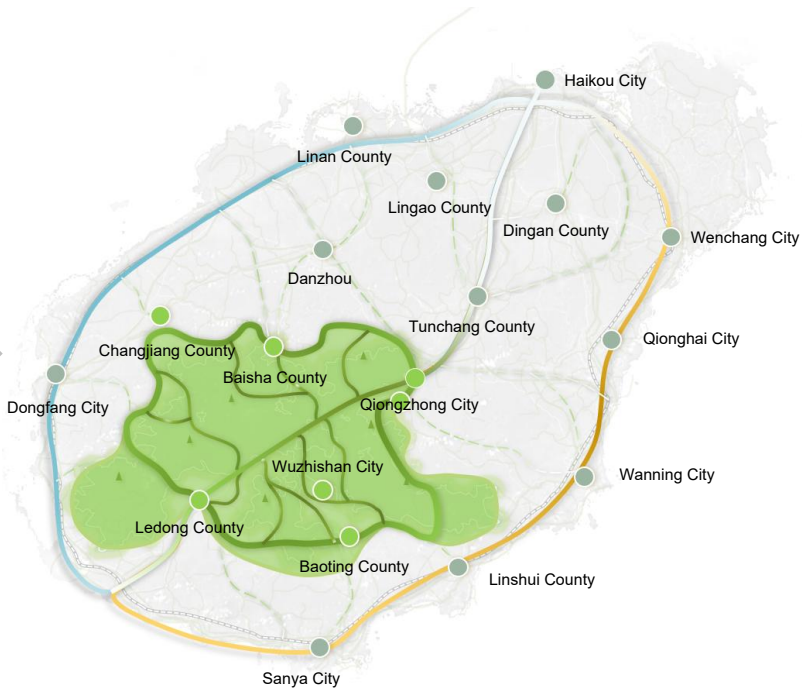
**The bond of the national treasures, the heart of the rainforest**

——— A journey around the rainforest national park



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## The Relationship between Tourist Highways and National Parks



### ECOLOGICAL PROTECTION

1. Restore vegetation communities along the line, ensure the authenticity and integrity of the tropical rainforest ecosystem, and build a resilient green ecological barrier.
2. Emergency passage for the rescue of endangered wild animals.
3. Build an intelligent ecological detection network to cover tropical rainforests, respond to sudden disasters in time, and also feed back soil and climate detection data to the management team of Tropical rainforests National Park in real time.

### TRAVEL SERVICES

1. To form an effective way to introduce and promote the rainforest National park.
2. Complete the tourism service facilities along the route, and create a new tourism brand of Hainan Province of "rainforest exploration".
3. Build a green tourism transportation network connecting scenic spots and tourism resources in the hinterland of Hainan Province.

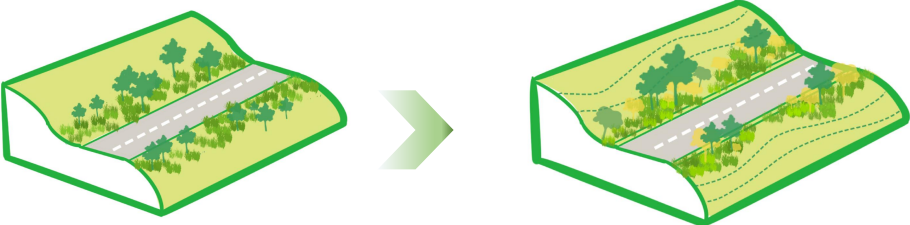
### LIVELIHOOD IMPROVEMENT

1. Develop potential minority villages into skylight communities and loop entrance communities within national parks, form characteristic industry containers, and create theme tourism projects.
2. Develop forest health industry to promote sustainable development of local economy.



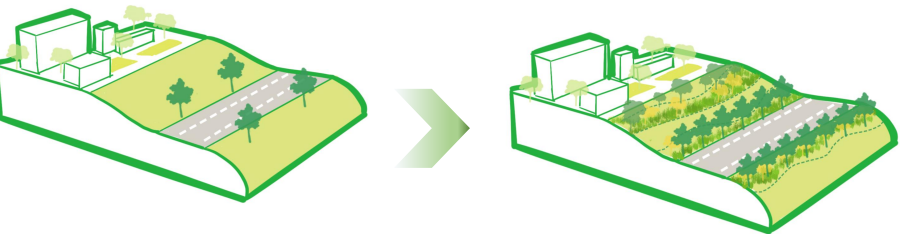
# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Ecological protection – habitat restoration strategy



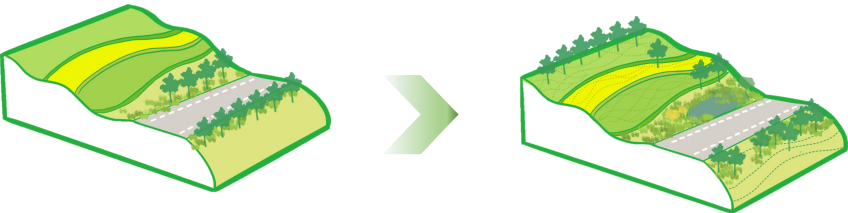
Roadside vegetation needs to be improved

Combing trees, clearing weeds, and arranging them in a proper manner



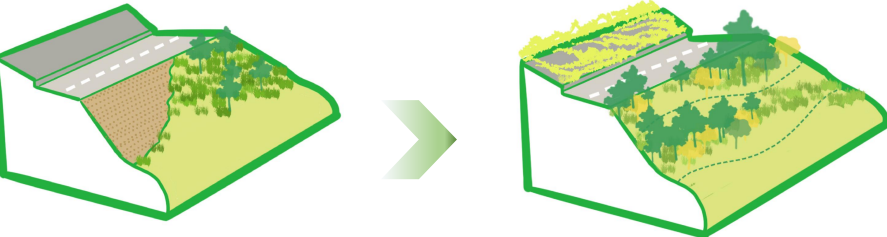
Buildings along the road lack ecological barriers

Increase plant layers and establish ecological barriers



The obstruction of farmland landscape by row planting along the road

Protect the status quo, open up visual corridors, and optimize plant structure



Exposed slopes along roads

Repair exposed slopes and add climbing plants

The Tropical Rainforest National Park has a superior natural base. The construction of this project will minimize the impact on the regional ecological environment, follow the principle of giving priority to biodiversity conservation, and focus on resource and environmental protection. On the premise of ecological protection, it will strengthen the management and scientific utilization of resources and the environment, establish a new pattern of harmonious coexistence between man and nature, and integrate with the Tropical Rainforest National Park.

The planting effect along some sections is not good. On the basis of maintaining the original style and characteristics, the vegetation along the road sections with poor vegetation communities are adjusted and sorted, the layers are increased, the structure of the dominant forest community is optimized, and the density is naturally planted to create a tropical rain forest plant structure style.

The residential and industrial building sections lack plant shelters, so plant layers are added to enrich the scenery. The vegetation style is kept uniform. Continuous water interception facilities are added along the route, and water purification sedimentation tanks are set up to improve the rainwater and sewage purification capacity. Garbage collection facilities are added at service points along the road to reduce domestic garbage along the route.

For sections with superior natural base conditions, minimal intervention is implemented on high-quality sections to maintain the original style and features, and some trees are appropriately adjusted to block the view of the landscape, with appropriate opening and closing. The existing depressions are combined with sponge city measures to collect and filter road rainwater, increase wetland plants, and enrich ecological diversity.

Relying on the rich resources of the Tropical Rainforest National Park, the project site has excellent natural base conditions, but some areas are still ecologically insufficient, so ecological landscaping treatment is carried out on the exposed slopes and slope protection.



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Ecological conservation-habitat restoration measures

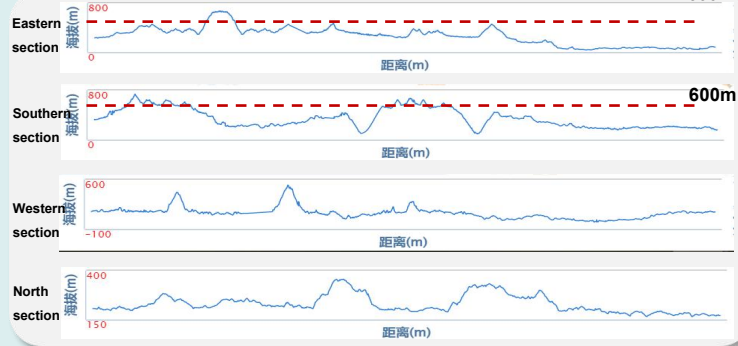
### Pollution-resistant plants:



### Priority planting at lower elevations below 600m:



### 600m or higher altitude priority plants:





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Ecological protection – habitat restoration strategy





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Ecological protection – habitat restoration strategy



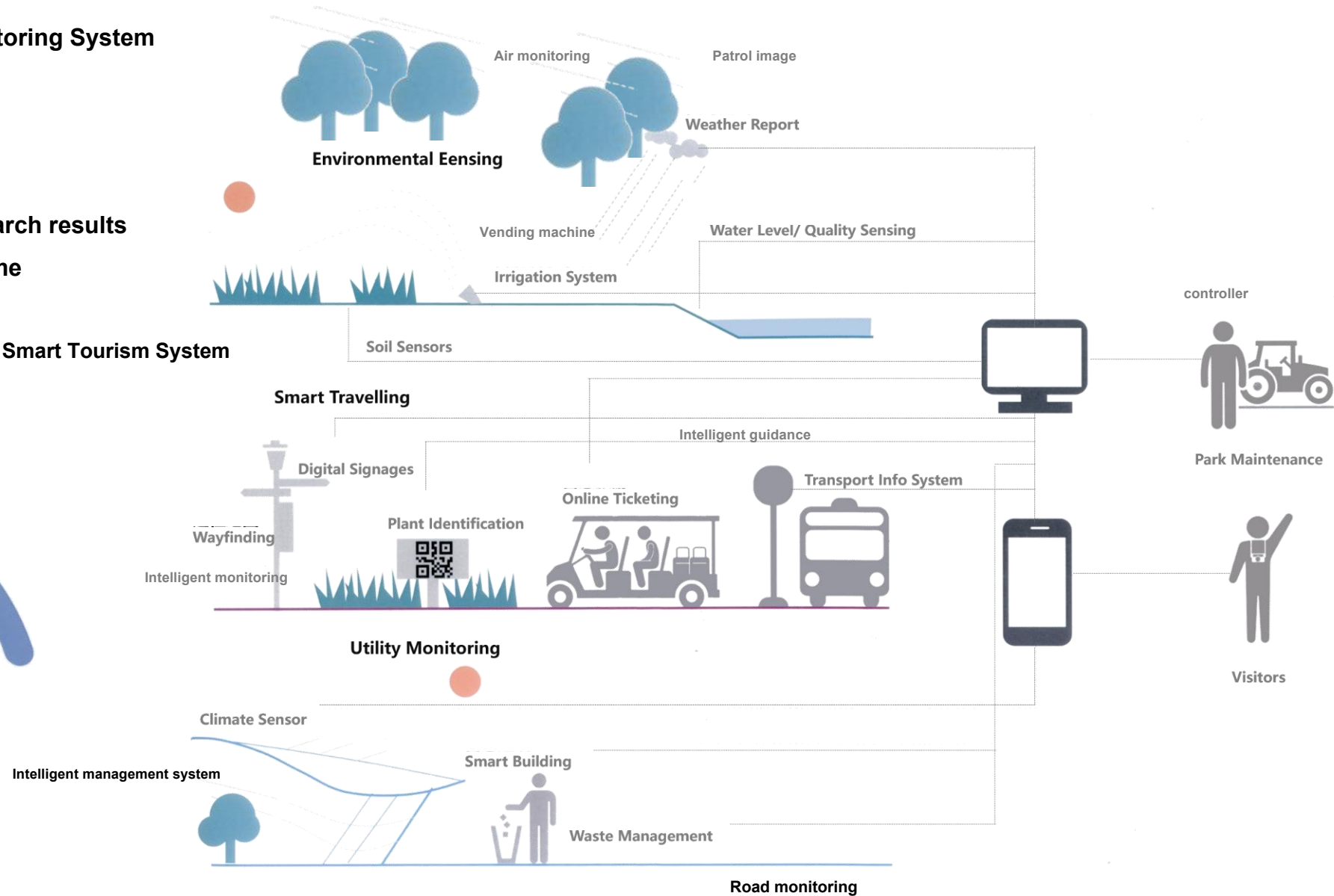


# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Ecological Protection——Ecological Monitoring System

A window for national park scientific research results

Transmit monitoring information at any time



The construction of tourist roads can become a window for the national park detection system. Through the service system of post stations along the road, the monitoring results of the national park can be conveyed to tourists at any time, thereby improving the intelligent science popularization service function of tourist roads.

# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Ecological Protection——Ecological monitoring system demonstration courier station



Lingshui Li Autonomous County



Rainforest  
National Park



The secrets of animal diversity  
Rainforest science education base



吊罗山

大里瀑布

小妹水库

## Dali Falls Second-class Courier Station

Listen to the small clawed otter talk about the mystery of water - the Great Mile Falls

Listen to the rain forest for the peace you can't find in the city



### Main strategy

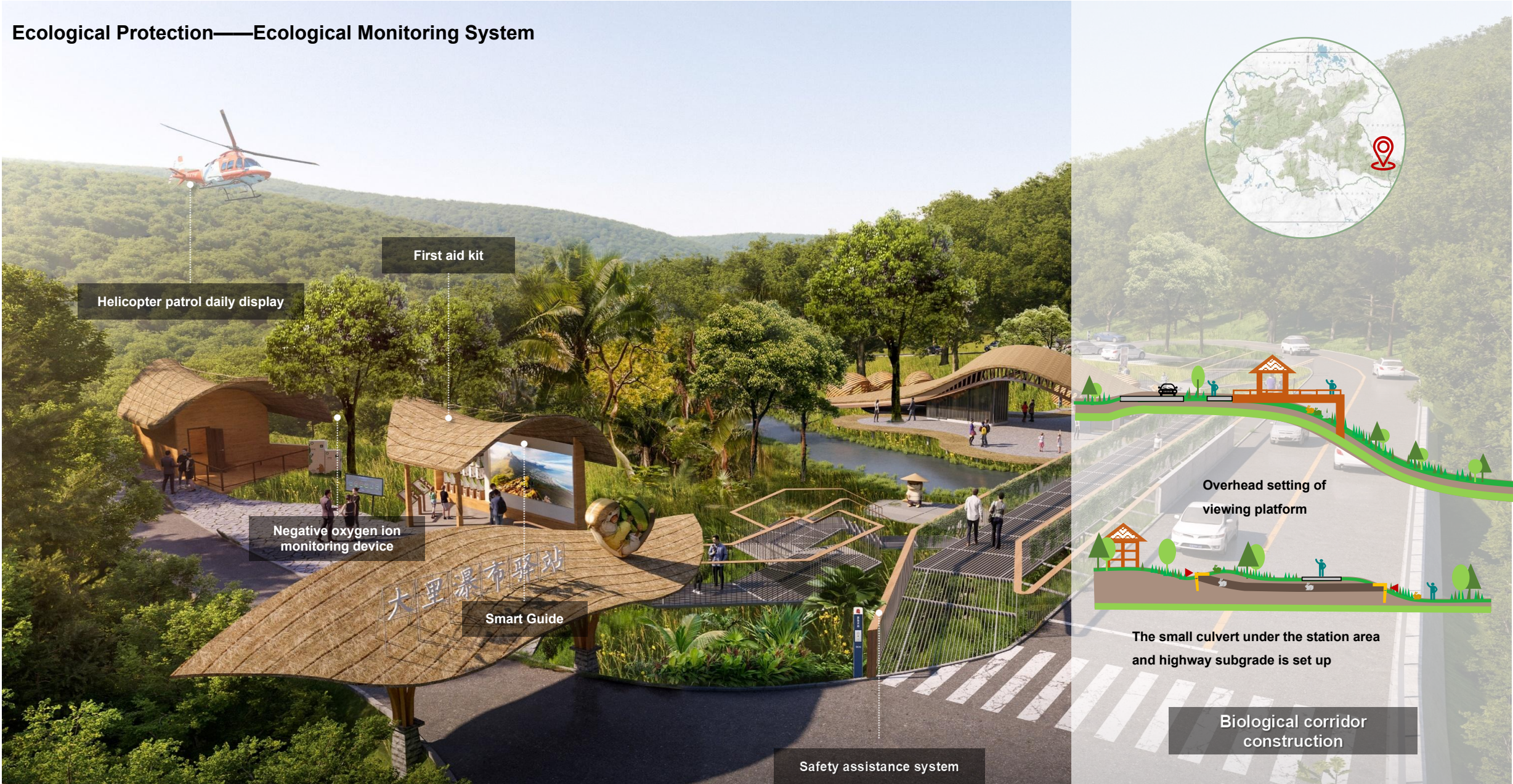
Shaping the rainforest partner IP

Directing visitors to take on the role of rainforest master



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Ecological Protection——Ecological Monitoring System





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Ecological Protection——Ecological Monitoring System

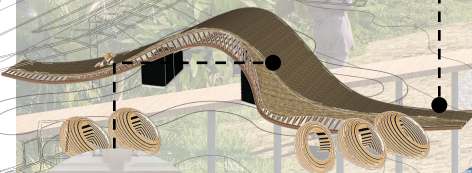


Biodiversity Education



Resting Landscape

Management room



Coffee and Tea



Science education



Intelligent tour guide system

Smart Tourism System



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Ecological Protection——Ecological Monitoring System





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Ecological Protection——Ecological Monitoring System



Rural market

Water Painting Exhibition

Tropical Plant Education

Live CS experience

Event Planning

Use local materials  
Design and construction to reduce  
carbon emissions



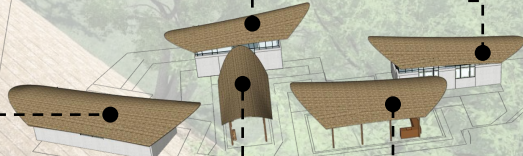
Visitor Center



Rest and recreation



Souvenir shop



乡村公共空间



Fair under the tree



Open-air coffee



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Ecological Protection——Ecological Monitoring System



Carbon sink forest

Natural design  
Low carbon design

Local materials, environment  
friendly



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tourism Services – Landscape Structure





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tourism services - Facilities and event planning



### Researcher

Activity time: 5:00-9:00, 18:00-20:00

Stopover location: Mainly in the heart of the tropical rainforest, supplemented by post stations for supplies and meetings



### Explorer

Activity time: 8:00-10:00, 15:00-21:00

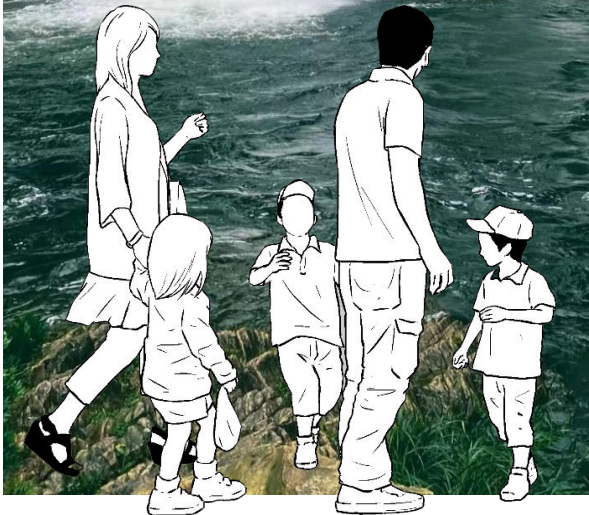
Place of stay: mainly in dangerous areas, requiring high professionalism



### Traveller

Activity time: 8:00-12:00, 14:00-18:00

Stopover location: mainly for developing scenic spots, supplemented by post station supplies



### Science educator

Activity time: 8:00-10:00, 14:00-18:00

Stopover location: Mainly in the heart of the tropical rainforest, supplemented by post stations





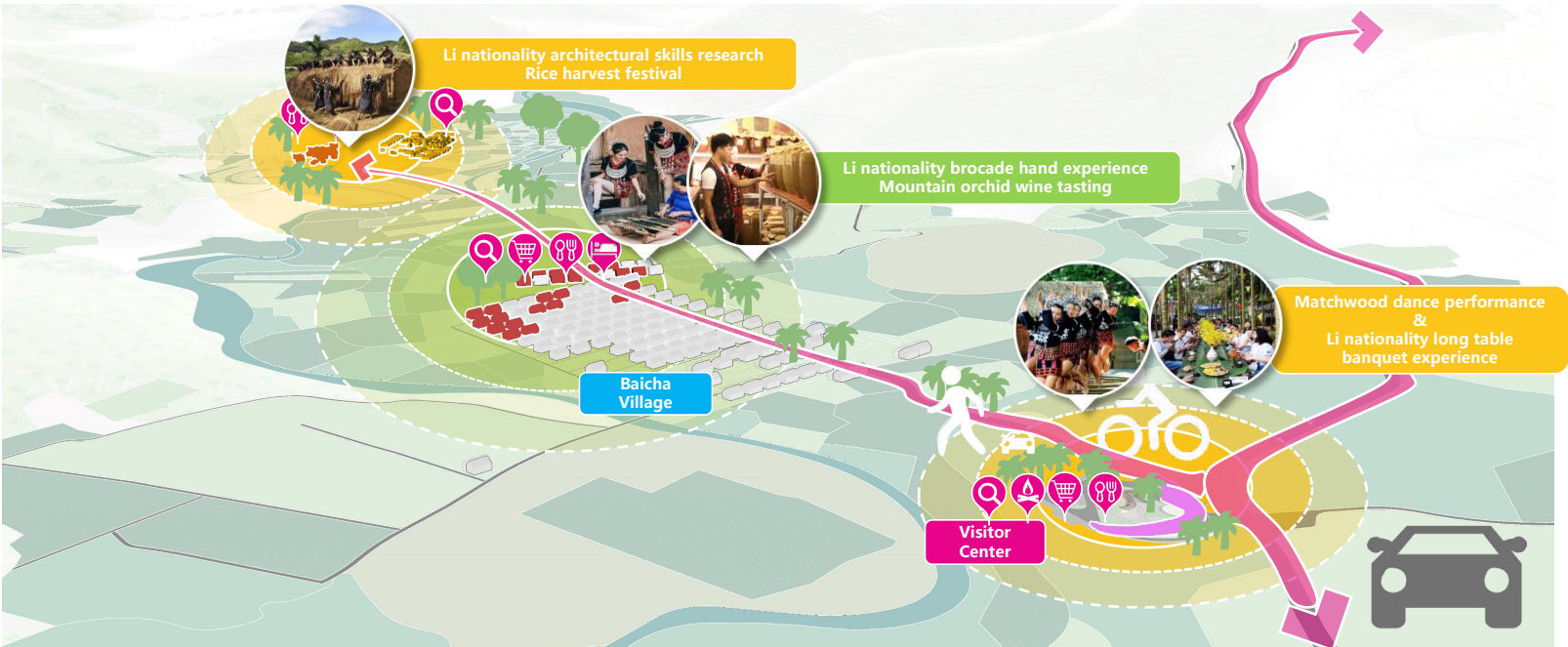
# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tourism services - Facilities and event planning



### Enhance the relevance of surrounding classic resources

The villages along the road with large volumes and relatively well-preserved folk culture will be transformed into tourist service centers as distribution points for a large number of people. Qicha Town takes Hainan gibbon science popularization as the theme, with 35 gibbons hidden in building facades, pavements, logos and other locations. While taking photos and collecting stamps in the alleys with the official app, learn about the protection of precious animals and plants and improve the public's awareness of ecological protection. At the same time, with the villages and attractions outside the radiation route of the tourist center, tourists can visit the red kapok landscape and Bawangling National Forest Park by cycling or driving for branch tours.



### Enhance the experience of cultural heritage

The Baicha Village Visitor Center area focuses on the theme of folk culture experience. Visitors can participate in the study of local ethnic skills, singing and dancing performances, and food tasting.



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tourism services - Facilities and event planning demonstration courier station



- Basic farmland
- Grade IV protected forest land
- field
- Natural reserve area
- Urban construction land



### Green code

Search for the rain forest spirit - Hainan Gibbon  
Walk into the rainforest and enjoy the scenery of Bawangling



### Main strategy

Experience a rich and interactive study tour of the Rainforest National Park  
Community interaction strategy to enhance rural economic vitality and reshape rural talent pattern



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tourism services - Facilities and event planning



### Discover 35 gibbons and raise public awareness of ecological protection

There are 35 gibbons in the outdoor environment, hidden in the entrance logo, pavement, building facade and other different areas, tourists can connect the official APP by mobile phone to make a secret tour, collect 35 gibbons can receive rewards at the entrance, cultural and creative products also strengthen the rarity of Hainan gibbons only 5 groups of 35. Let the public understand through this activity gibbon protection, rainforest environmental protection is imminent, improve the public awareness of ecological protection.



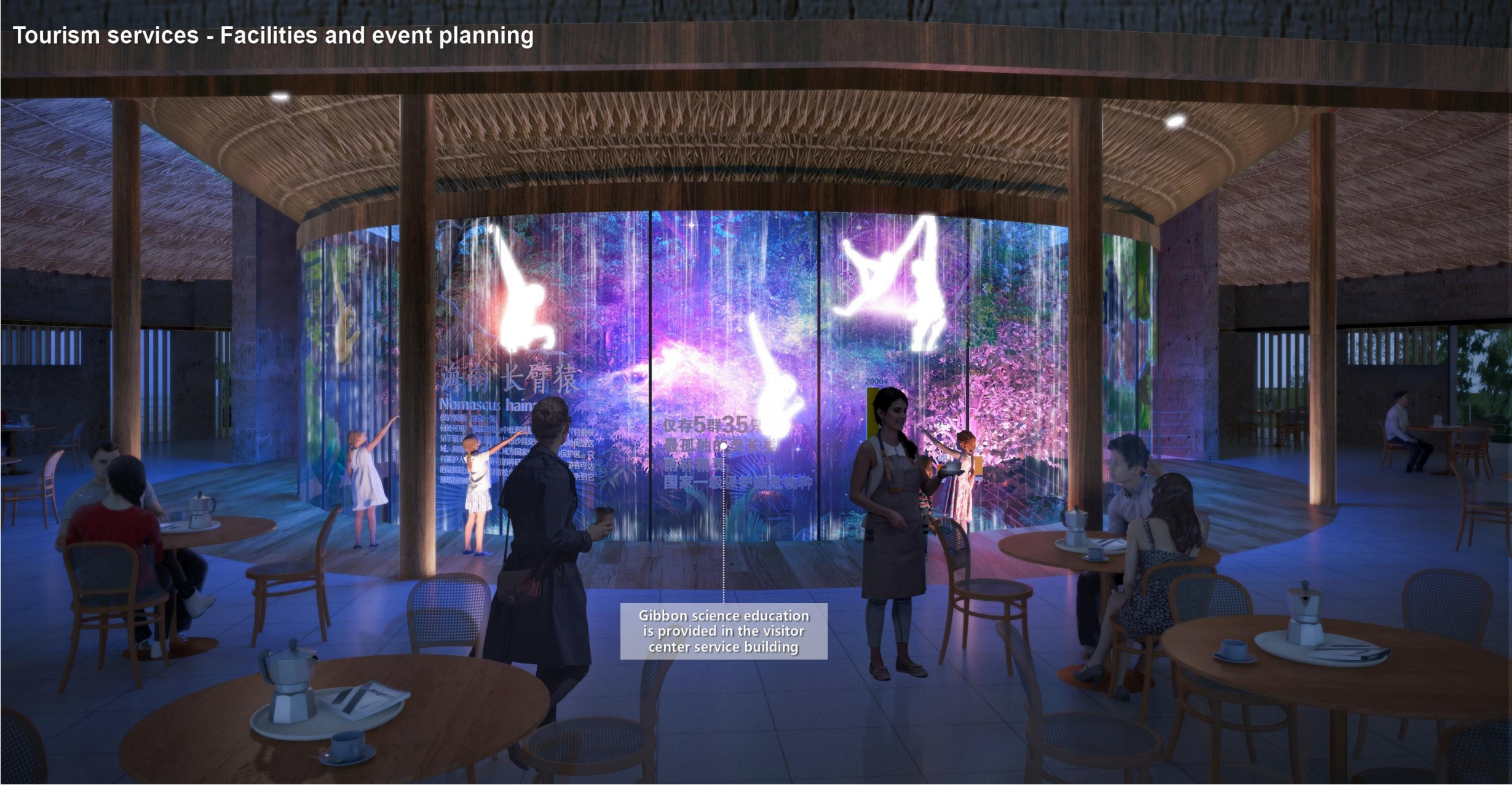
Landscape Planning of the Tourist Highway around Tropical Rainforest National Park





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Tourism services - Facilities and event planning

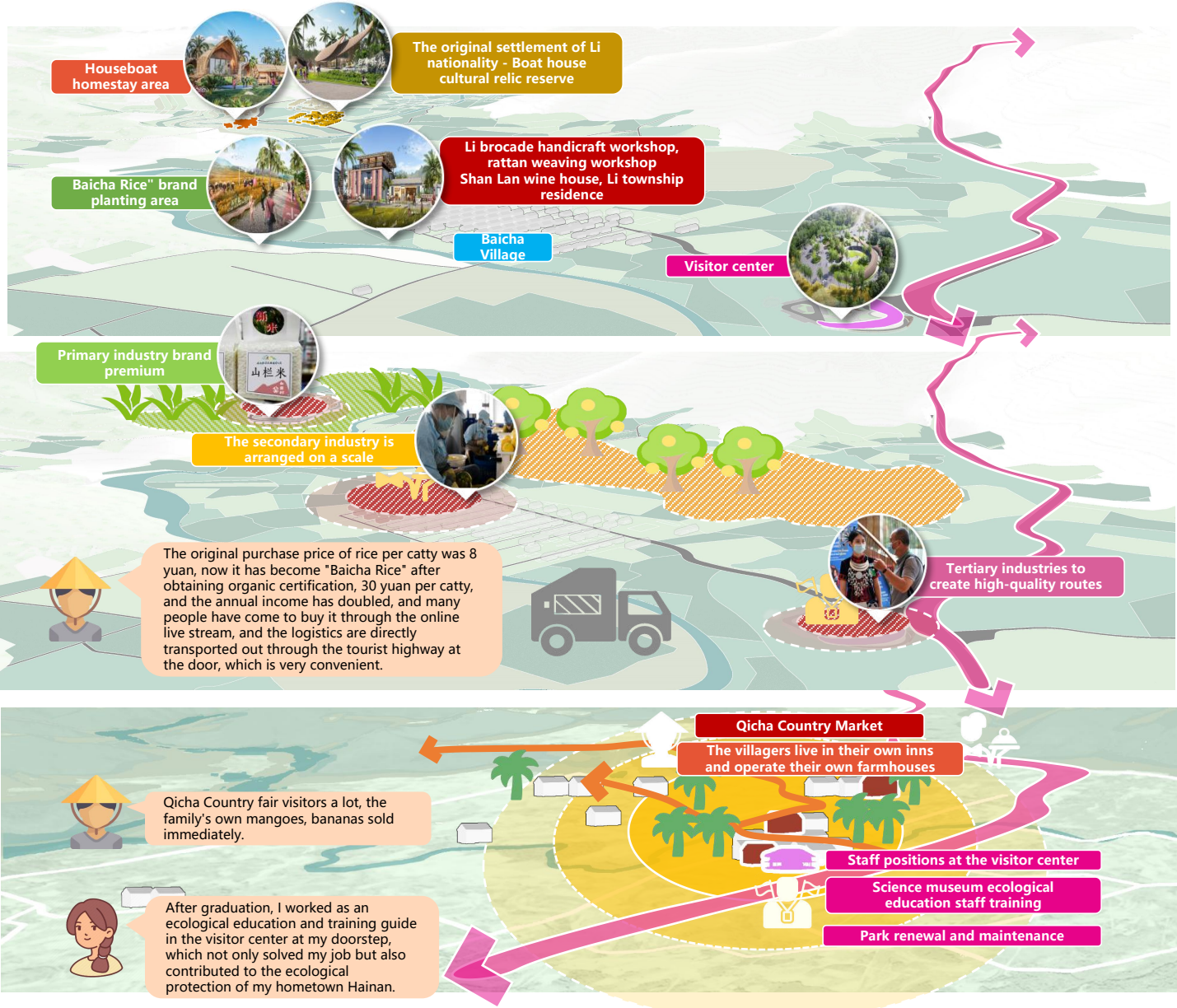


Gibbon science education is provided in the visitor center service building



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Improvement of people's livelihood - industry drives employment



### Spatial layout

Use idle houses for renovation to activate low-quality and inefficient land resources in rural areas

Organize villagers to learn about ecological protection and education, promote local training of rural talents with high-quality service standards, and provide employment opportunities at the tourist center.

### Integration and improvement of industries

1. Product brand premium

Process Shanlan rice into rice, create the "Bai Cha Shan Lan" brand, strive for international organic certification, and increase brand added value.

2. Production scale implementation

Improve the level of agricultural modernization and process mangoes into dried mangoes.

3. Product boutique route

Develop rural tourism and train local villagers in service awareness.

### Provide local employment opportunities

Use idle houses to increase farmers' income

Encourage villagers to use their own idle houses to build inns and farmhouses, and the government will take the lead in proposing construction and operation standards.

Renovate and upgrade Qicha Farmers' Market and hold rural markets regularly  
Renovate and upgrade Qicha Farmers' Market, hold rural markets as a tourist attraction, attract tourists, and help villagers increase their income.

Organize villagers to learn about ecological protection and education, and the visitor center provides jobs

During the operation of the visitor center, establish a training mechanism for local villagers and provide jobs.

# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Improvement of people's livelihood - industry drives employment demonstration courier station



**Touch the living fossil of Li nationality -- Bai Cha Houseboat**  
**Live in the ancient Li tribe to feel the temperature of national culture**



Houseboat construction technology • preservation, inheritance and utilization of ancient villages  
Rural industry revitalization • Rainforest National Park landscape display



**Main strategy**  
A trilogy of rainforest plans to boost rural economy  
The primary industry to build the brand, the secondary industry to implement  
the tertiary industry to build high-quality products on a large scale



# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Improvement of people's livelihood - industry drives employment

Provide stalls for local residents

七叉乡村集市

Qicha Village Fair revitalizes the local agricultural economy





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Improvement of people's livelihood - industry drives employment





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

## Improvement of people's livelihood - industry drives employment

Innovatively express Li culture,  
adhere to low-carbon and sustainable concepts,  
implement localization of materials and construction processes.





# Landscape Planning of the Tourist Highway around Tropical Rainforest National Park

Improvement of people's livelihood - industry drives employment



Post management provides employment opportunities

Rural workshops provide employment opportunities



# ESG Evaluation

ESG evaluation is an evaluation standard that focuses on environmental, social and governance performance. Based on ESG evaluation, this plan can evaluate the contribution of its planning results in promoting sustainable economic development and fulfilling social responsibilities.

## Environmental

260+60 km of vegetation improvement  
35 ecological corridors

- Effectively improve the natural ecological vegetation landscape along the road 260 kilometers;
- Improve 60 kilometers of vegetation construction in industrial zone to reduce the impact of industrial zone on national park;
- The facility design effectively ensures the migration and reproduction of 35 corridors.

## Social

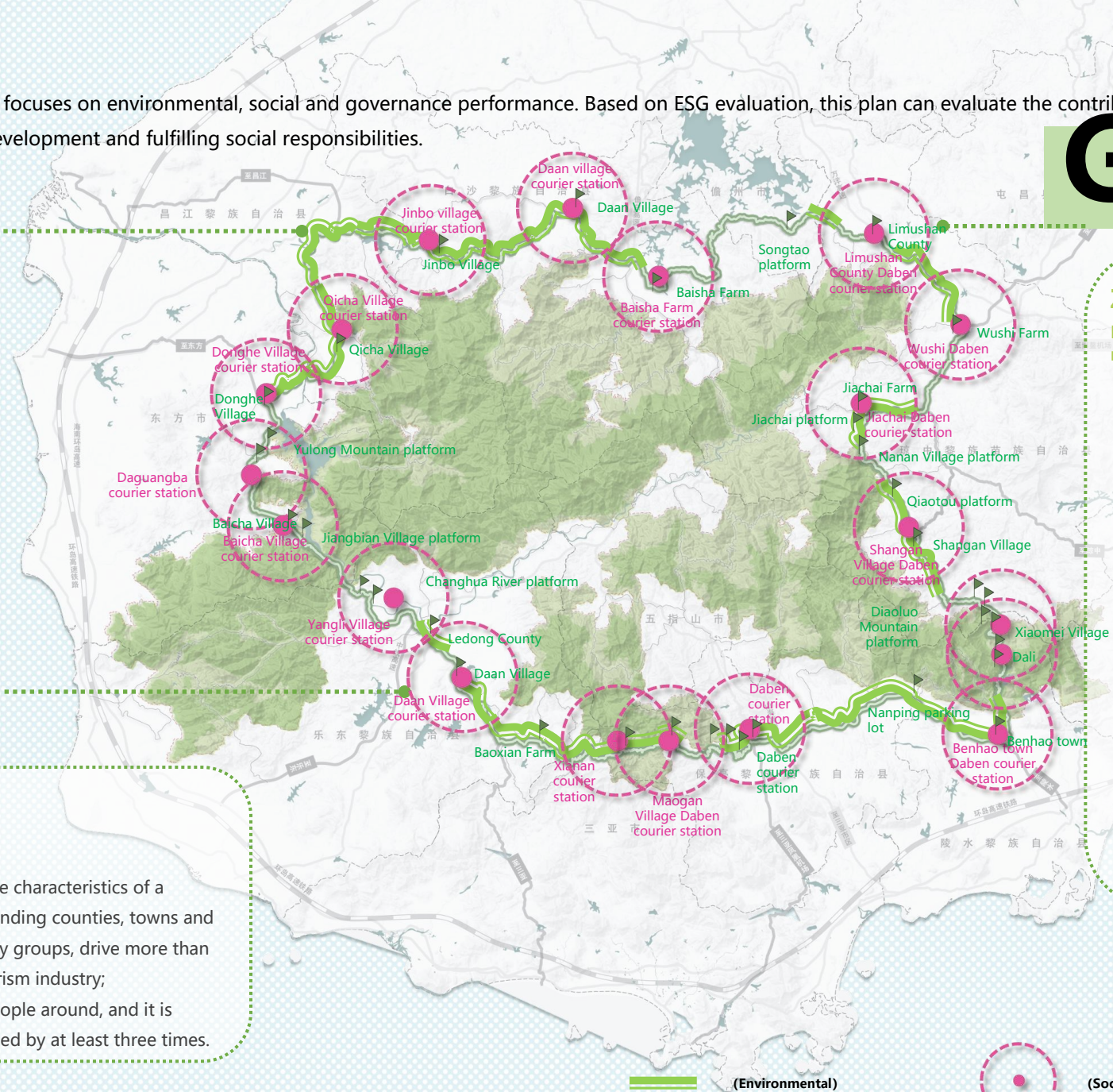
Triple the economic income  
5500 jobs + 1w jobs surrounding

- To build a decrypted first-class post station with the characteristics of a national park, coordinate development with surrounding counties, towns and villages, form 13 effective virtuous circular economy groups, drive more than 5,500 local jobs, and drive the development of tourism industry;
- Improve the economic benefits of nearly 10,000 people around, and it is expected that the per capita income can be increased by at least three times.

## Governance

Zero carbon construction  
Full cycle 69.6 tons, 2.3 tons/year CO2 reduction

- Effective control of environmental damage and pollution, construction materials 100% use local materials or natural materials, to achieve zero carbon construction;
- Through the zero-carbon road construction strategy, the road from raw material production to the end of the operation period, the full cycle of carbon dioxide emission reduction of 69.6 tons; Through the ecological detection system, rescue facility system, intelligent management facilities, to achieve comprehensive and efficient management of tourist highways, reducing carbon dioxide emissions of about 2.3 tons per year.



(Environmental)

(Social)

(Governance)