

FLOURISHING ONE HEALTH

GREEN REGENERATION PLANNING OF DACHENG MOUNTAIN PARK IN TANGSHAN, CHINA

PROJECT STATEMENT

Dacheng Mountain Park (118 hectares), situated in the heart of Tangshan, China, has long served as a key recreational space for residents. However, due to prolonged neglect, it now faces significant challenges, including ecological degradation, diminished vibrancy, and environmental hazards.

In alignment with the "One Health Joint Plan of Action" initiated by the FAO, UNEP, and other organizations, this project addresses the interlinked health of humans, flora, fauna, and the urban environment through a comprehensive approach to diagnostics, renewal, and health planning for Dacheng Mountain Park. Utilizing remote sensing data and monitoring systems, we have developed a three-tier diagnostic framework at site, community, and city scales centered on the park.

Based on diagnostic results from these tiers, we propose strategies focused on biological, human, and urban health. These strategies include biological health measures, human-centered health approaches, and environmental health initiatives for both the park and its surrounding areas. Rooted in the core principles of the "One Health Joint Plan of Action," the plan integrates public engagement and intelligent management to create a healthier, smarter, and more sustainable Dacheng Mountain Park.

PROJECT NARRATIVE AND CONTENTS

■ Background

In 2022, the United Nations introduced the "One Health Joint Plan of Action," providing new guidance for global urban development. In response, the Chinese government advanced the green development concept to align with this vision. Dacheng Mountain Park, a model for Tangshan's green transformation, urgently needs scientific updates for sustainable development. This project employs multi-source data analysis to enhance the park's ecological functions, facilities, and carbon sequestration, aiming to establish it as a model for urban renewal, ecological restoration, and sustainability, thus contributing to the goal.

Located in central Tangshan City, Hebei Province, Dacheng Mountain Park covers 118 hectares, making it the city's largest comprehensive park. It plays a critical role in Tangshan's cultural, industrial, and ecological heritage, crucial for the city's green development. However, rapid urbanization has led to aging infrastructure, limited functions, and inadequate management, causing habitat degradation, public security issues, and ecological risks.

■ Challenges

Natural aspects

As urban development accelerates, Dacheng Mountain Park confronts significant challenges. Aging infrastructure and a lack of innovative attractions have diminished its vitality and appeal. Inadequate management has intensified these issues, leading to heightened security concerns and environmental degradation. The declining habitat quality impacts the park's overall ecological health. Without timely upgrades and renovations, these problems will worsen, undermining the park's ecological integrity and value as a community asset.

Society aspects

Therefore, Dacheng Mountain Park urgently requires a thorough, science-based assessment. This evaluation will guide its modernization by improving facilities, enhancing recreational and cultural activities, and strengthening management. Crucially, it will restore ecological functions and community vitality, ensuring the park's pivotal role in enhancing residents' quality of life and driving urban development.

PROJECT NARRATIVE AND CONTENTS

■ Park Examination

Park physical examination model

In the context of urban diagnostics, our focus is centered on Dacheng mountain Park, where we have developed a comprehensive three-tier diagnostic framework that includes the park, the community, and the city. Throughout our evaluation process, we adhere strictly to the principles of breadth, depth, and intensity. Our systematic investigation encompasses 6 categories of park infrastructure, 3 categories of social service functions, and 4 categories of ecosystem services. From these, we have meticulously selected 32 key diagnostic indicators, which are calculated with scientific precision to accurately reflect the park's multifaceted impacts on ecological, social, and economic dimensions.

Park physical examination platform

To ensure the scientific rigor and comprehensiveness of our assessment, we leverage multi-source data resources and advanced computational platforms to conduct in-depth analysis. We utilize four primary diagnostic methodologies, which provide comprehensive, multi-dimensional, and multi-layered support for the park's evaluation. This approach allows us to construct a realistic, thorough, and efficient diagnostic system for Dacheng Mountain Park. By integrating Geographic Information Systems (GIS), remote sensing technology, social surveys, and ecological monitoring, we ensure that our diagnostics are grounded in empirical evidence and high-quality data.

Park physical examination value

This objective is to generate precise and actionable diagnostic insights, offering a robust scientific basis for formulating targeted management strategies and sustainable development plans. This systematic evaluation is designed to guide the future enhancement of Dacheng Mountain Park, ensuring its continued role as a vital ecological and social resource for the community and the city.

PROJECT NARRATIVE AND CONTENTS

■ Strategy System

Park scale-biological health

Biological health assessment at Dacheng Mountain Park focuses on evaluating and enhancing ecological vitality at a local scale, specifically examining the integration of plants and animals within their environment. The planning strategy encompasses three key aspects:

· ***Upgrading of Forests***

We have transformed 18.2 hectares of low-efficiency forest by optimizing tree species composition and enriching age structure, effectively enhancing the forest's ability to resist environmental changes.

· ***Upgrading of Habitat***

We are supplementing various habitat types within the park and creating 5 major themed habitat zones to enhance the stability of the ecosystem, fostering a robust ecosystem capable of supporting a wide array of species.

· ***Upgrading of Education***

We have established nine major science education centers and over 50 interactive educational points and interpretive signs aimed at educating visitors about the diverse flora and fauna within the park.

These comprehensive initiatives are designed to enhance the biological health of Dacheng Mountain Park, ensuring its role as a thriving ecological sanctuary and a valuable educational asset.

PROJECT NARRATIVE AND CONTENTS

■ Strategy System

Community scale - people-centered health

People-Centered Health initiatives start at the community level, focusing on enhancing the health benefits of green spaces by developing a "One Ring, One Mountain" model. This aims to achieve an organic integration of residents' lives with the park's green spaces.

· *One Ring – Lively Community*

Within the park, 58 various gathering spaces have been established, supporting over 100 all-age community activities such as recreational gatherings, cultural events, and wellness lectures.

· *One Mountain – Healthy Dacheng Mountain*

The park carefully plans and designs six different types of green spaces, including a Meditation Garden, Biodiversity Garden, Activity Grounds, and Nature Education Trails. These spaces provide residents with therapeutic and relaxing environments, effectively increasing the happiness index of residents by 25%.

By integrating various elements, Dacheng Mountain Park will attract 280,000 visitors annually, generating an economic value of \$1,890,000. This will transform it into a vibrant, warm, and inclusive harmonious community, fostering a harmonious and healthy social atmosphere and cultivating a green and sustainable community environment.

PROJECT NARRATIVE AND CONTENTS

■ Strategy System

City scale -environmental health

Biological health assessment at the site scale involves evaluating ecosystem health and the interaction of plants and animals within their environment. This approach focuses on three core strategies:

- ***Enhance the Ecosystem***

Establish an Ecological Network to enhance connectivity between blue and green spaces, creating biodiversity corridors, and enhancing ecological resilience in the face of urban development.

- ***Enhance the Stormwater System***

Reserve 79,200 cubic metres of stormwater storage space, implementing Toughness Safety measures for urban stormwater management through sustainable drainage systems and green infrastructure to mitigate flood risks, improve water quality, and enhance overall ecosystem resilience.

- ***Enhance the Carbon Sink System***

Formulate and enhance the forest carbon sink strategy to promote the sustainability of forest management by strengthening the carbon sequestration capacity of urban forests. This optimization of the urban carbon-oxygen cycle is expected to increase the annual carbon sequestration by 1,086.73 tons.

Together, these integrated strategies aim to improve biological health, foster sustainable urban development, and safeguard environmental quality, ensuring resilient and biodiverse urban environments capable of effectively addressing future environmental challenges.

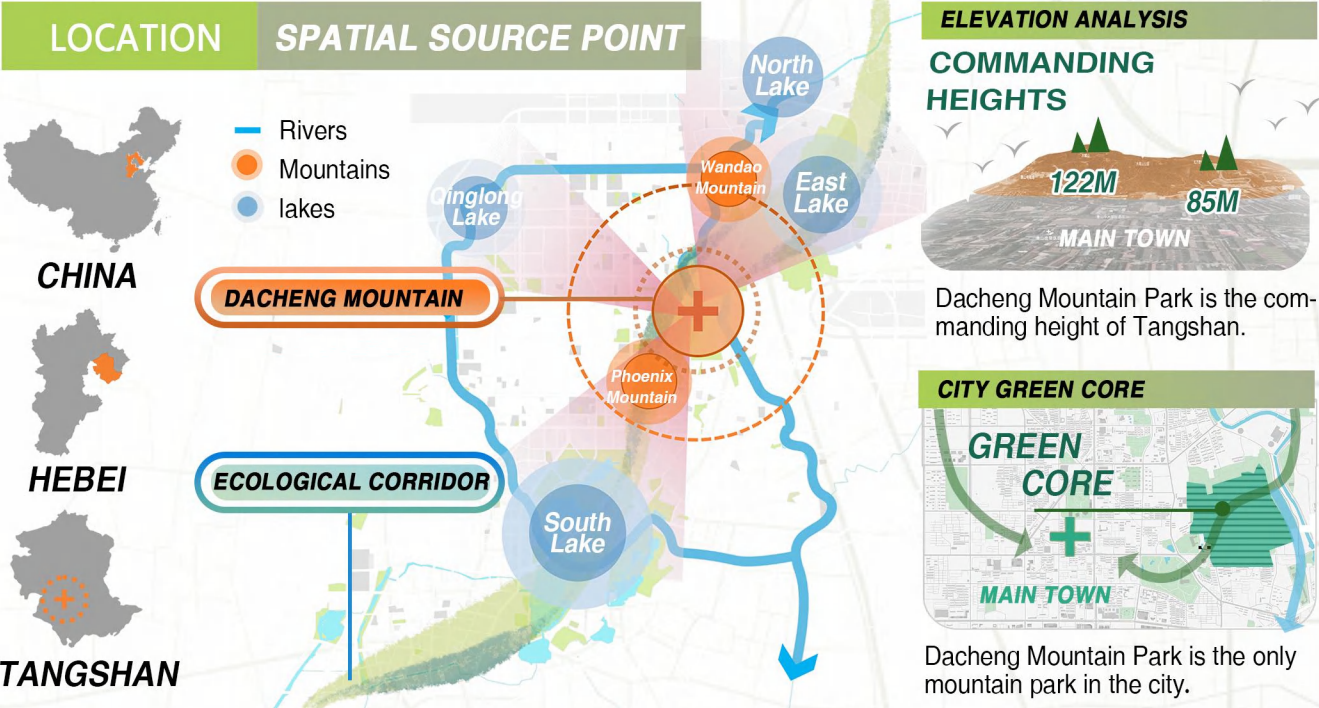
PROJECT NARRATIVE AND CONTENTS

■ **Public Participation & Smart Management**

Through the establishment of a dual-axis model integrating "Public Participation - Park Management" and "Online - Offline Participation," we have delineated four core service domains. This model is designed to thoroughly advance the digital transformation of the park and enhance the on-site visitor experience, thereby augmenting management efficiency and public engagement. Leveraging the deep integration of the Internet of Things (IoT) and Artificial Intelligence (AI), we are developing a multifaceted intelligent management platform that merges cloud-based and real-world applications. This sophisticated model enables comprehensive community building, widespread nature education, public feedback assimilation, and intelligent operations management within the park. It increases the depth of public involvement, expands the scope of park management, and provides robust support for the sustainable development of future parks.

01 BACKGROUND

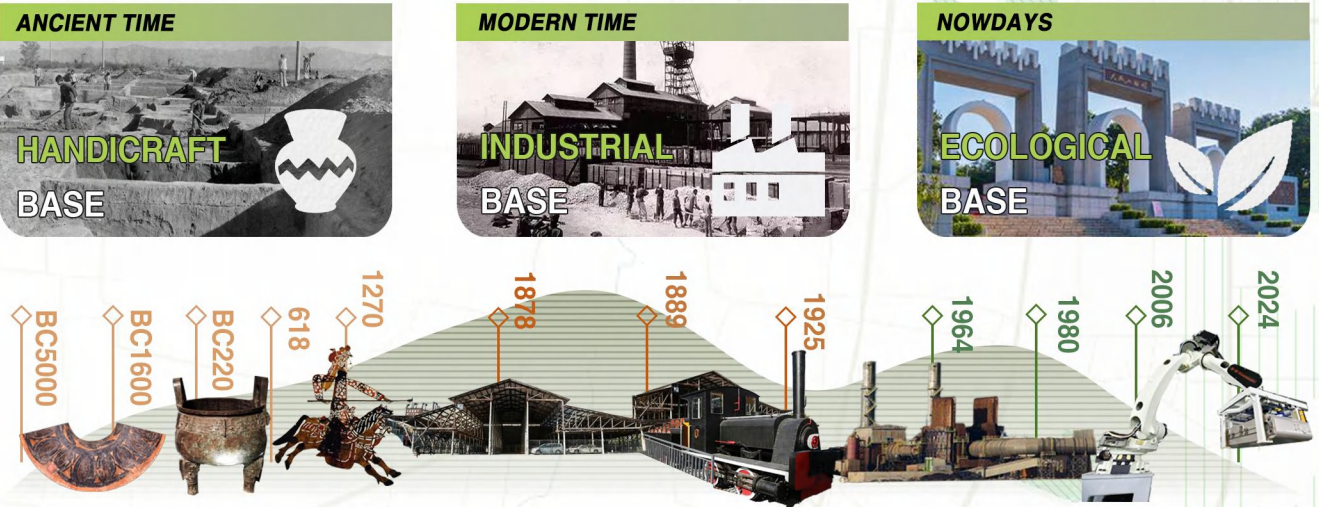
Dacheng Mountain Park, spanning 118 hectares in central Tangshan, Hebei, is the city's largest comprehensive park. It is the cradle of Tangshan's cultural, industrial, and ecological heritage, serving as a vital ecological node that promotes urban renewal and green development.



CULTURE

HISTORICAL AND CULTURAL SOURCES POINT

Dacheng Mountain Park is **THE BIRTHPLACE OF TANGSHAN'S HISTORY AND CULTURE**, and is **AN IMPORTANT ENGINE** for the city's green and sustainable development.




02 CHALLENGES


As urban development accelerates, Dacheng Mountain Park is experiencing challenges such as aging infrastructure, limited amenities, and inadequate management. These issues contribute to habitat degradation, environmental deterioration, and security risks. As a crucial element for driving urban growth, the park urgently requires a thorough evaluation and strategic upgrades to restore its ecological functions and enhance its role in urban development.

HABITAT


SPOT OF ECDESOLATION




VEGETATION DEGRADATION




40% DEGRADED FORESTS




SINGLE COMMUNITY



GARBAGE POLLUTION




DESOLATE FACILITY




23.6% BARE ROCK

SOCIETY


ZONE OF UNDERBELLY




DERELICT BUILDING




30+ ABANDONED BUILDINGS




RUNDOWN PLACE



ECOLOGICAL DESOLATION




LAND POLLUTION




SOIL EROSION

ECOLOGY


AREA OF VULNERABILITY




LAND POLLUTION




SOIL EROSION




ECOLOGICAL DESOLATION



23.6% BARE ROCK



LAND POLLUTION



SOIL EROSION



HABITAT



ECOLOGY



SOCIETY

DISORDER-ENVIRONMENT & SECURITY & MANAGEMENT

Due to **POOR MANAGEMENT**, Dacheng Mountain Park has become **A HOTSPOT FOR ILLEGAL ACTIVITIES, SEVERELY IMPACTING PUBLIC ORDER.**

DANGER-WATER AND SOIL POLLUTED & ECOLOGY DEGRADED

Due to **IMPROPER MANAGEMENT**, Dacheng Mountain Park suffers from severe pollution and soil erosion, rapid plant community degradation, and **JEOPARDIZED ECOLOGICAL SECURITY.**

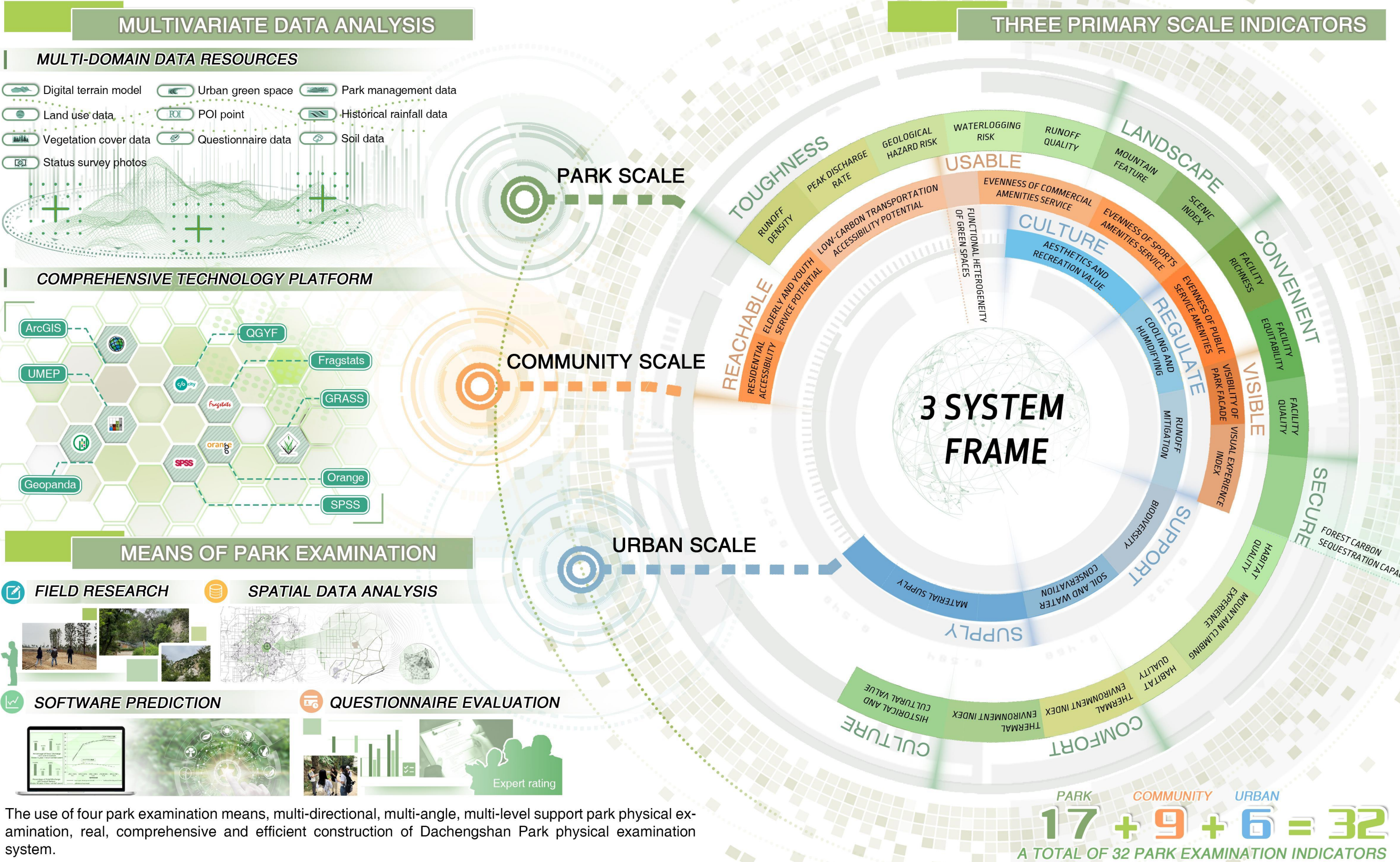
DESTRUCTION-ANIMAL AND PLANT COMMUNITIES & DIVERSE HABITATS

Due to **ENVIRONMENTAL CHANGES**, Dacheng Mountain Park's once diverse and rich habitats have been significantly damaged, becoming **INCREASINGLY UNIFORM AND DETERIORATING INTO A BARREN LANDSCAPE.**

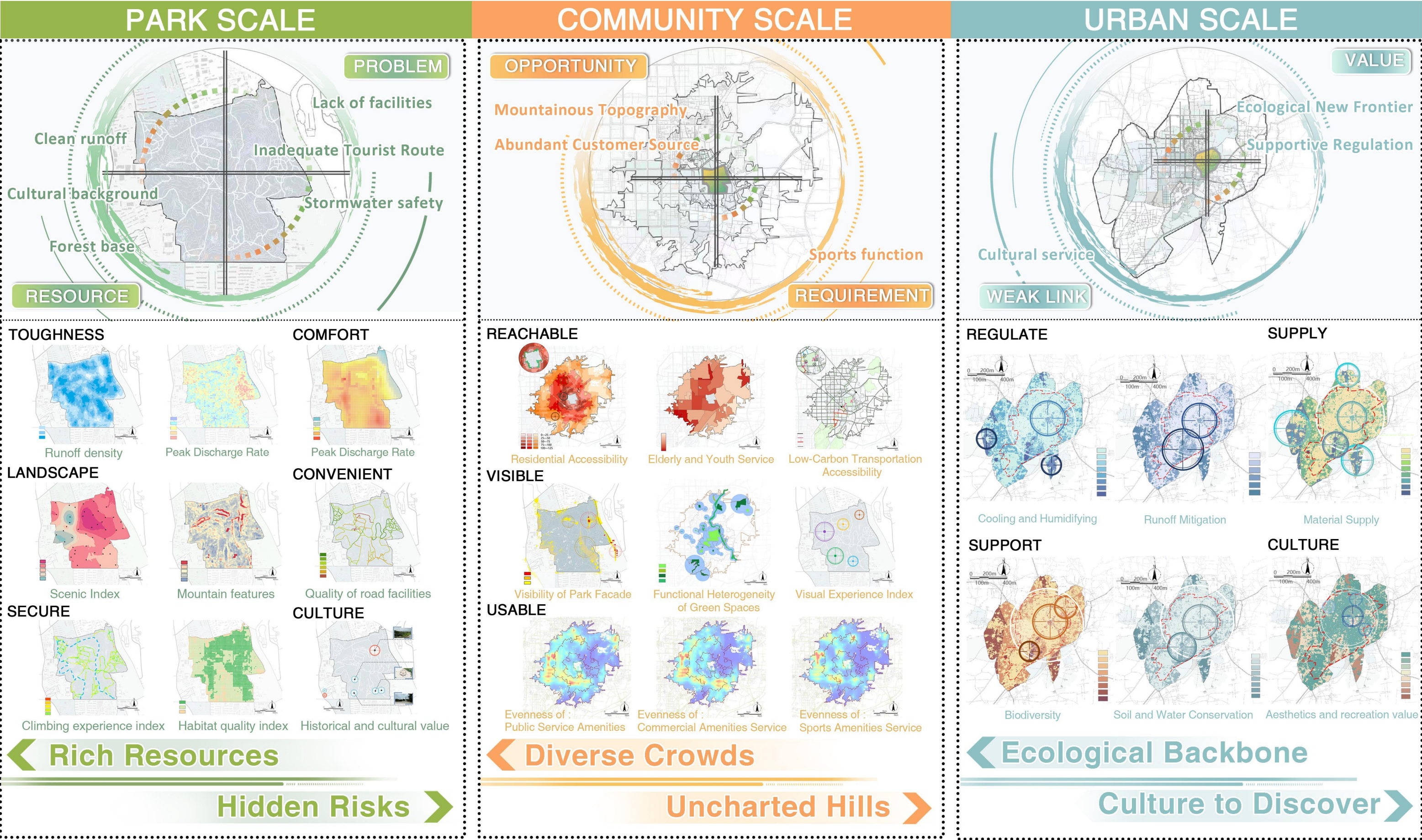
HOW?

03 PARK EXAMINATION

Against the backdrop of urban health check, we take the Dacheng Mountain Park as the center to establish three major health check scales of park, community, and city. Adhering to the principles of breadth, depth, and temperature, we investigate 6 types of internal baselines, 3 types of external functions, and 4 types of ecosystem services, selecting a total of 32 health check indicators. Specifically, we use multi-source data resources and platforms for analysis, and rely on four major health check methods to truly, comprehensively, and efficiently construct the health check system for Dacheng Mountain Park.



04 EXAMINATION RESULTS



05 STRATEGY

PARK SCALE

STRATEGY 1-BIOLOGICAL



FOREST FORM
IMPROVEMENT



HABITAT
CONSTRUCTION



SCIENCE
POPULARIZATION

COMMUNITY SCALE

STRATEGY 2-PEOPLE-CENTERED

LOHAS COMMUNITY



GATHERING
CIRCLE

VITALITY
LOOP

LEISURE
LOOP

HEALTHY DACHENG MOUNTAIN



HEALTH
MAINTENANCE

THERAPEUTIC
GARDEN

CITY SCALE

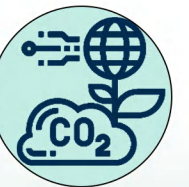
STRATEGY 3-ENVIRONMENTAL



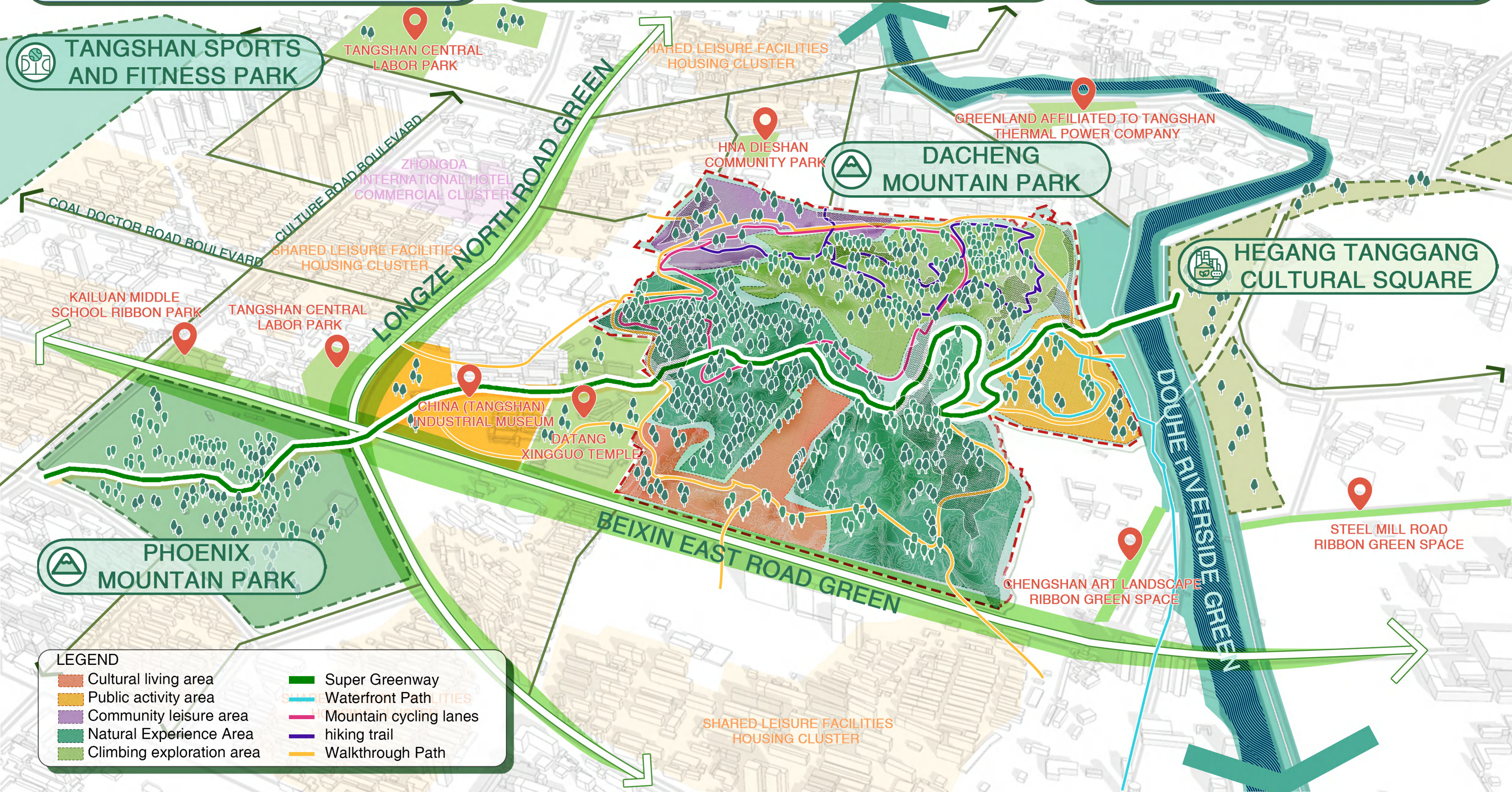
BLUE-GREEN
INTEGRATION



RESILIENCE
SECURITY



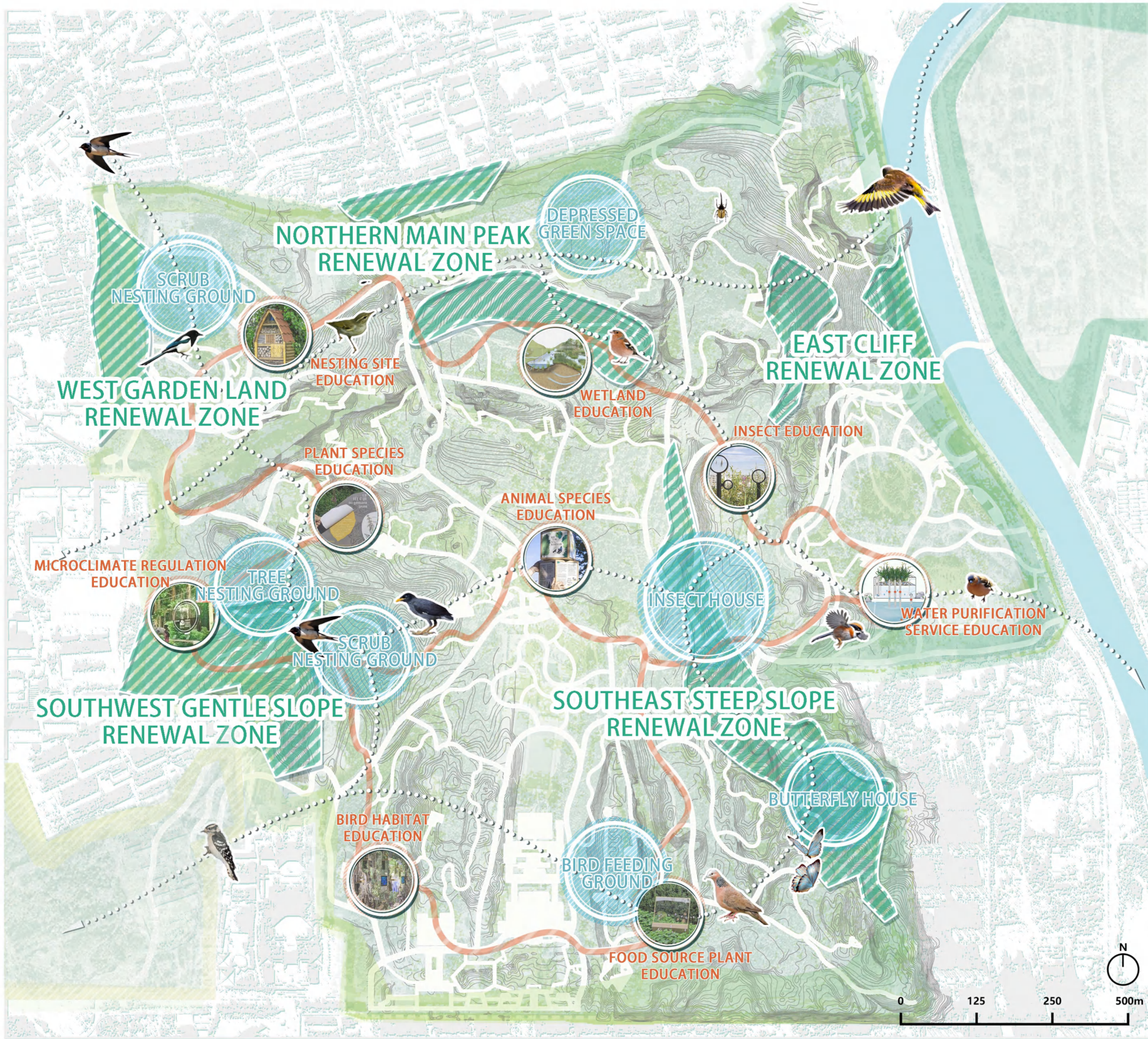
FOREST
CARBON STOCK



06 BIOLOGICAL HEALTH

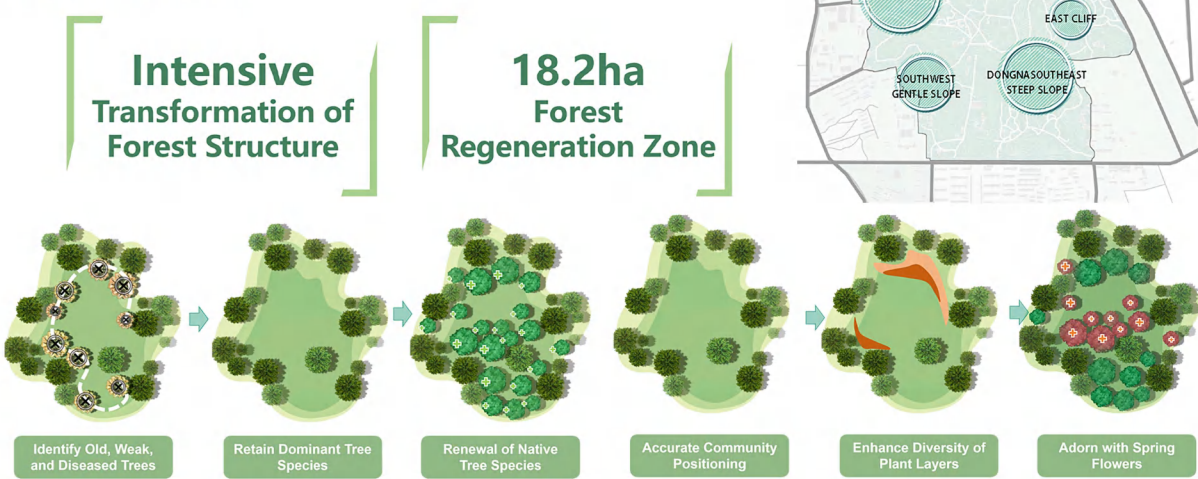
Biological health focuses on site-scale health levels and analyzes the integration of plants and animals with the environment. The planning is carried out from three aspects:

- **FOREST FORM IMPROVEMENT:** Improve forest structure to enhance forest resistance and resilience.
- **Habitat Construction:** Create diverse habitats from aquatic to terrestrial.
- **Science Popularization:** Design educational points to show the variety of animal and plants.



FOREST FORM IMPROVEMENT

Precision Renewal: Targeting areas of aging forest structure, conducting precise identification of old, weak, and diseased trees, and avoiding clear-cutting for reforestation.

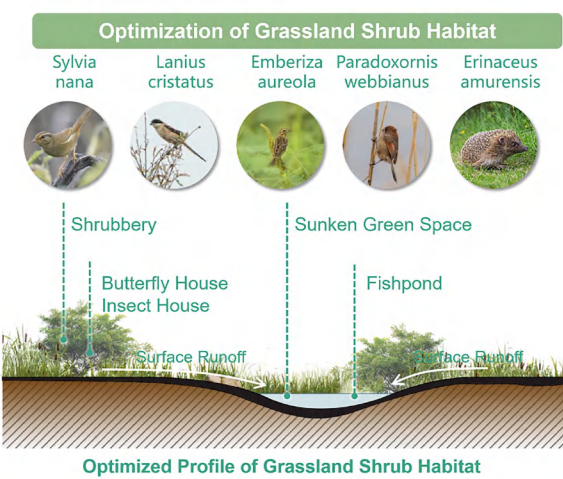


HABITAT CONSTRUCTION

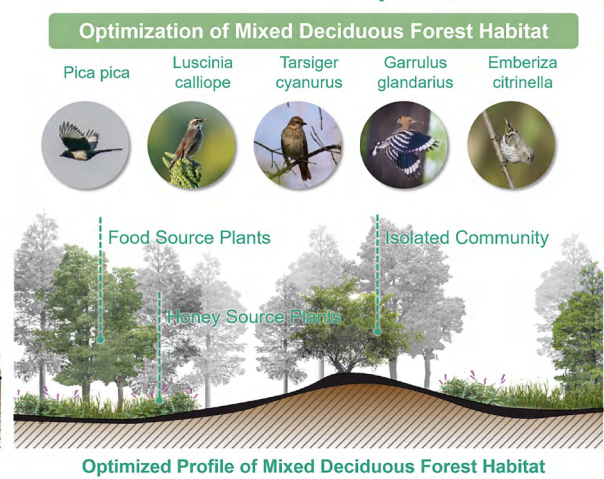
Constructing Three-Dimensional Habitats



Terrestrial Habitats

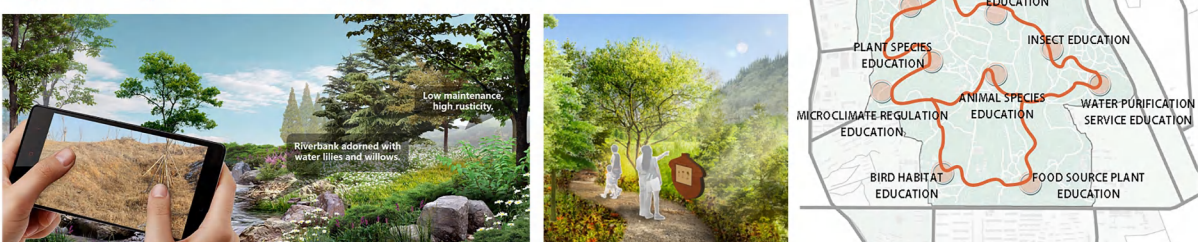


Aquatic Habitats



SCIENCE POPULARIZATION

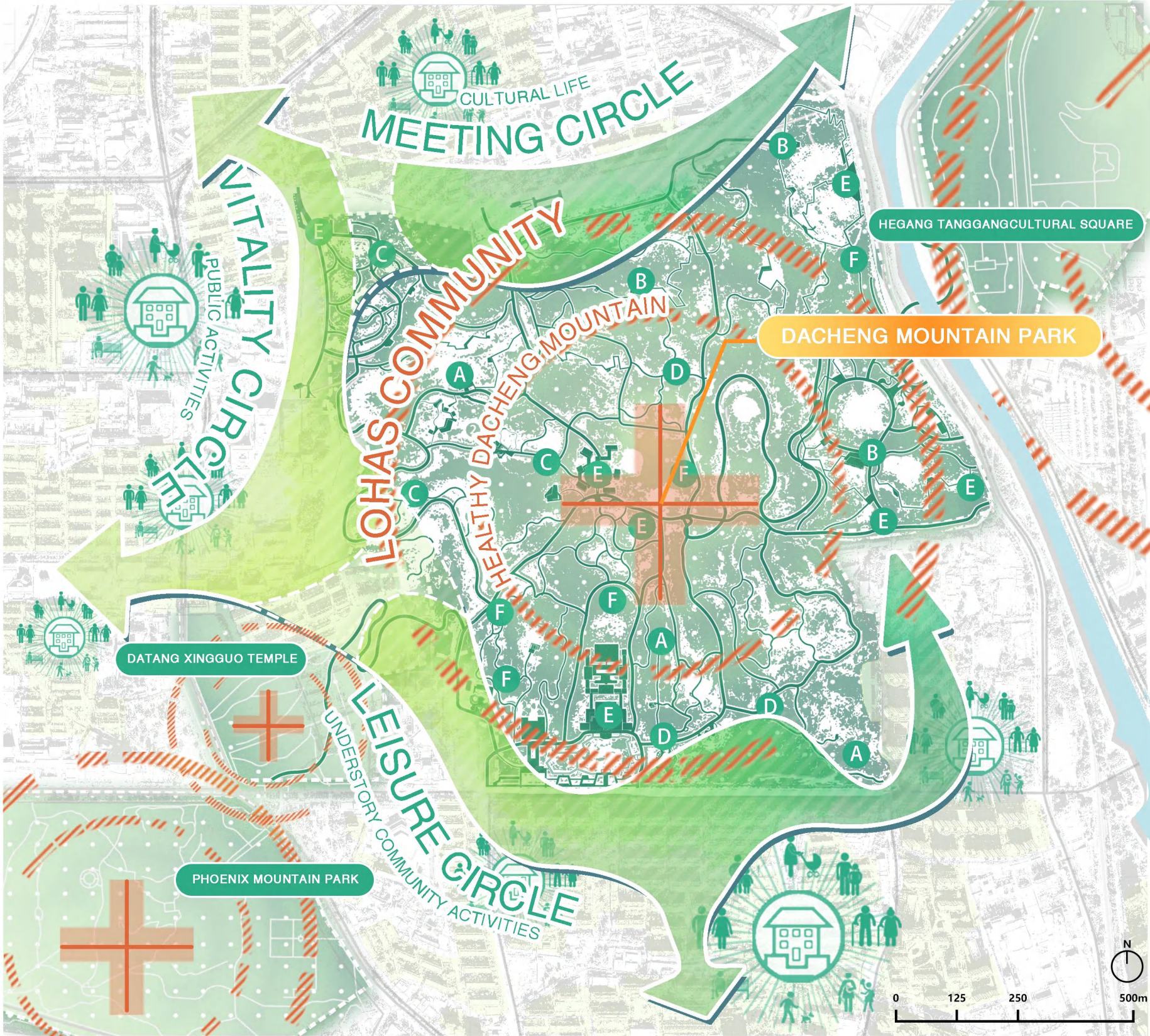
Combining terrain features and vegetation characteristics to create uniquely themed rustic gardens, integrating low-impact natural cognitive activities.



07 PEOPLE-CENTERED HEALTH

People-Centered Health focuses on the health levels at the neighborhood scale and analyzes the integration of people with park green spaces. It plans a landscape structure of 'one ring, one mountain':

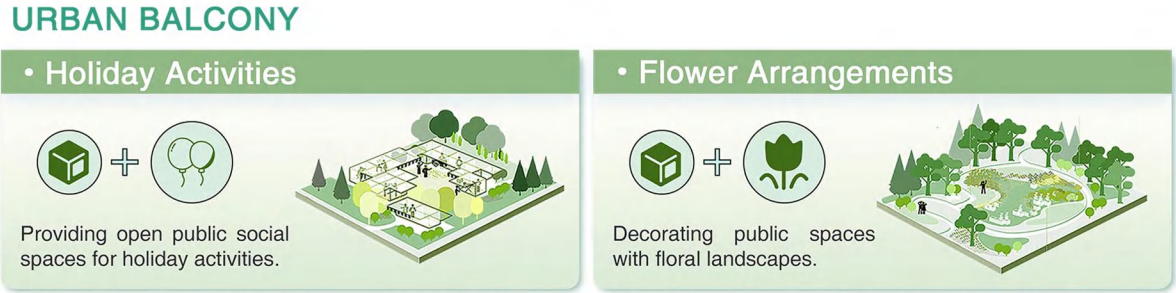
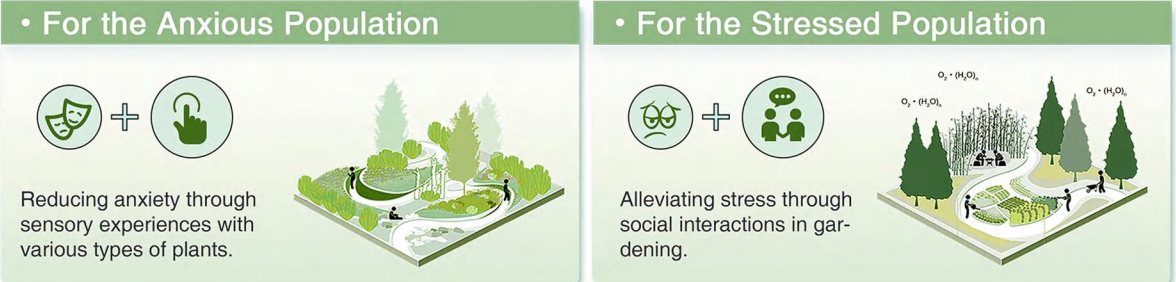
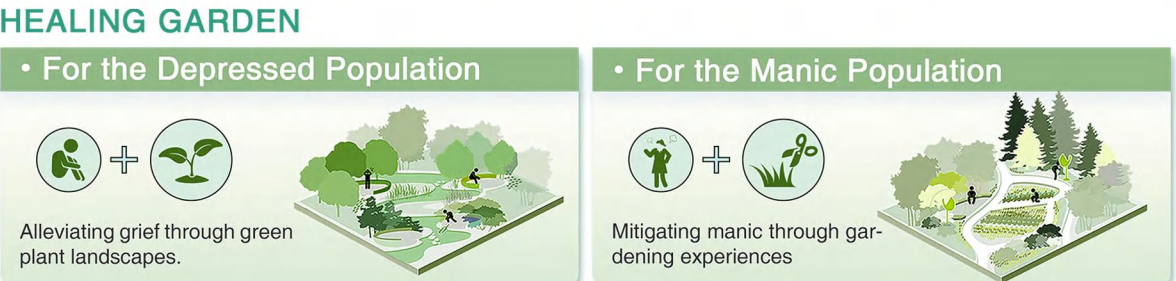
- **One Ring-Lohas Community:** Planned meeting spaces, leisure areas, and vitality circles for three types of community activities.
- **One Mountain-Healthy Dacheng Mountain:** Designed six types of green space designs to heal soul.



LOHAS COMMUNITY



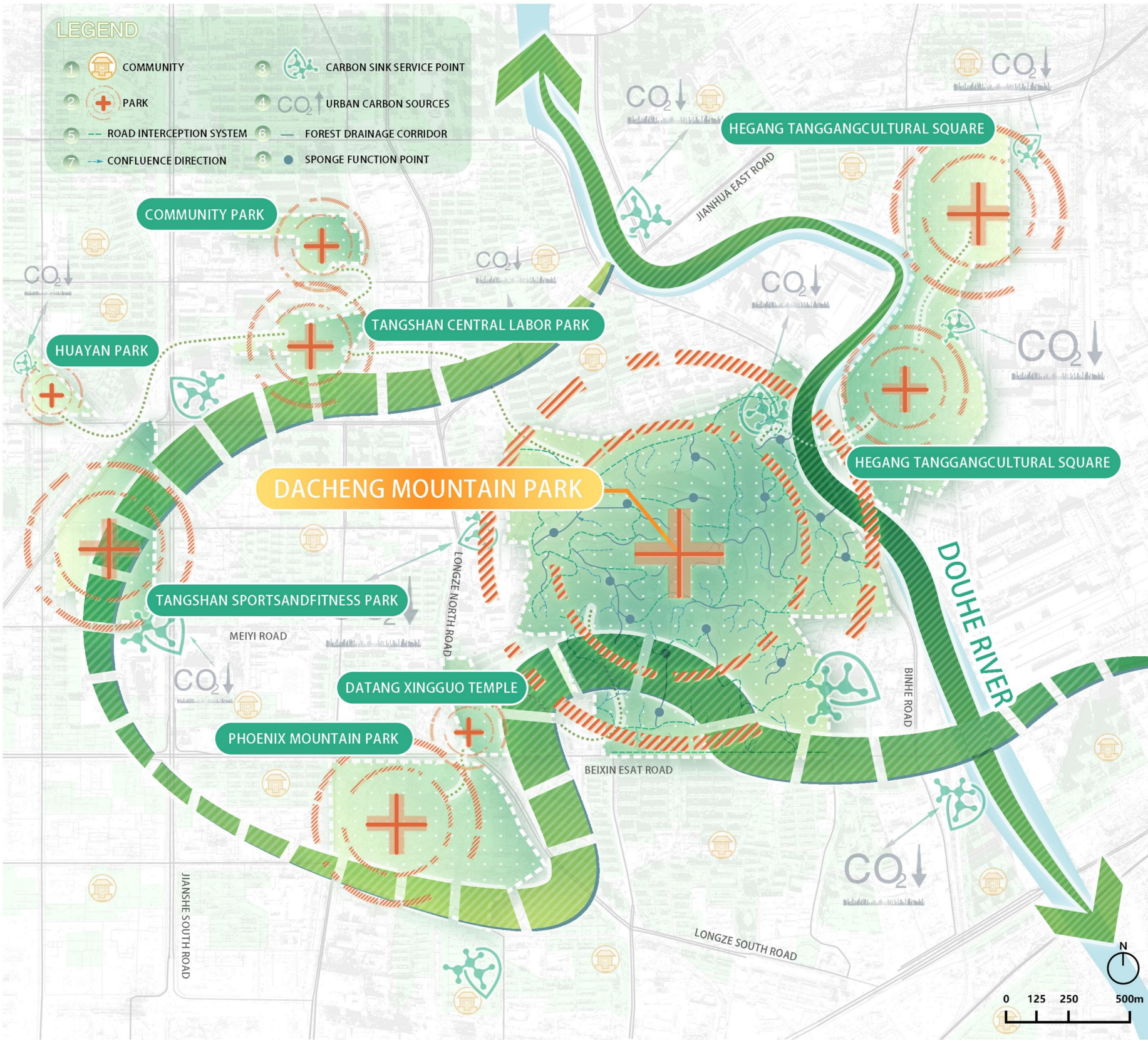
HEALTHY DACHENG MOUNTAIN



08 ENVIRONMENTAL HEALTH

Biological health focuses on site-scale health levels and analyzes the integration of plants and animals with the environment. The planning is carried out from three aspects:

- **Blue-Green Integration:** Connect urban blue and green spaces to lead urban green development.
- **Resilience Security:** Build sponge cities to alleviate the hazards of mountainous rainwater.
- **Forest Carbon Stock:** Integrate surrounding cultural resources to activate urban cultural heritage.



BLUE-GREEN INTEGRATION

Slow Mobility System Connecting Multiple Parks

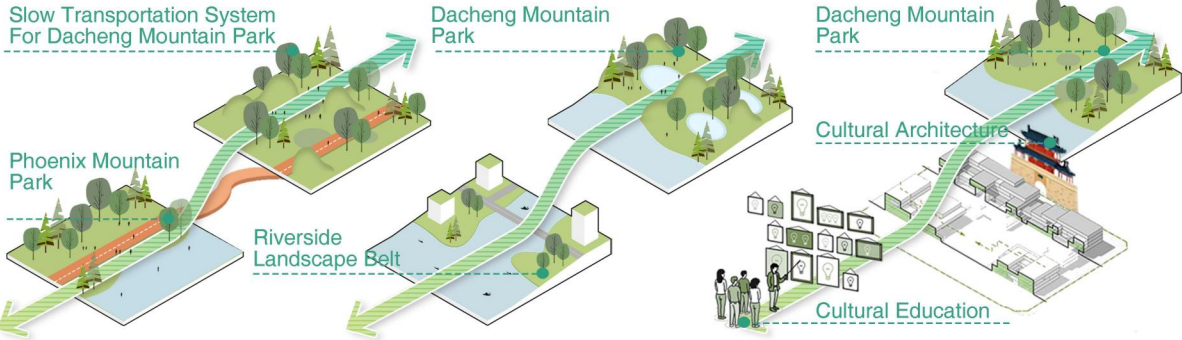
Slow Transportation System For Dacheng Mountain Park

Activate the Eastern River-side Landscape Belt

Dacheng Mountain Park

Serves as a green backyard for cultural architecture

Dacheng Mountain Park



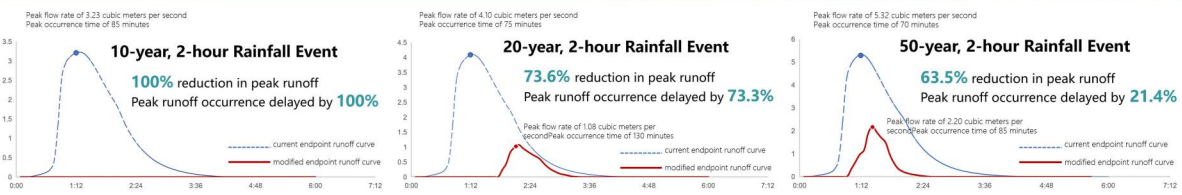
RESILIENCE SECURITY

Mountainous Region

Creating comprehensive and three-dimensional runoff transmission channels based on existing linear spaces such as ravines and roads.

Mountain Foothill Region

Utilizing soil advantages to save construction costs, transforming traditional water body storage into localized infiltration and retention.



FOREST CARBON STOCK



09 MASTER PLAN

The Dacheng Mountain Park Renovation Project is a key landscaping and public welfare initiative that has garnered the attention of the entire city. The design team aims to enhance functionality and address shortcomings, providing citizens with a green ecological landscape park that integrates running and fitness, nature appreciation, and leisure entertainment. This initiative seeks to improve environmental benefits, increase the value of surrounding land, and genuinely enhance the happiness and sense of fulfillment of the citizens.



ENVIRONMENT

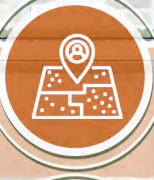


Rainwater storage capacity
79,200m³



Increase Carbon Sinks
1086.73 Tons/Year

ECONOMIC



Surrounding Property Value
\$1.89 Million



Enhancing Urban Attractiveness
280,000 People

SOCIETY



Improve Happiness Index
Over 25%



Provide Entertainment Opportunities
58 Locations

- 1. Cultural Monument
- 2. Ecological Wildlife Conservation Park
- 3. Ecological Reserve for Wild Plants
- 4. Science Popularization Bird Language Grove Area
- 5. Strange Slope Scenic Area
- 6. Western Sponge Construction Area
- 7. Eastern Carbon Sink Area
- 8. German Hansa Architecture Enhancement
- 9. Health and Wellness Cloud Gathering Activity Area
- 10. Health and Wellness Peach Blossom Island
- 11. Ecological Pear Blossom Valley
- 12. Forest Succession Red Maple Slope
- 13. Ecological Wildflower Blanket
- 14. Shared Mountain Top Urban Viewing Platform
- 15. Shared Ecological Sports Ground
- 16. Joyful Living Ecological Sports Ground
- 17. Ecological Children's Sports Ground
- 18. Ecological Ball Sports Field

10 SCENE OF HEALTH

HEALTHY RENEWAL METHODS BASED ON THE CURRENT SITUATION



Longshan Cultural Site

Reproduction of Historical Scenes

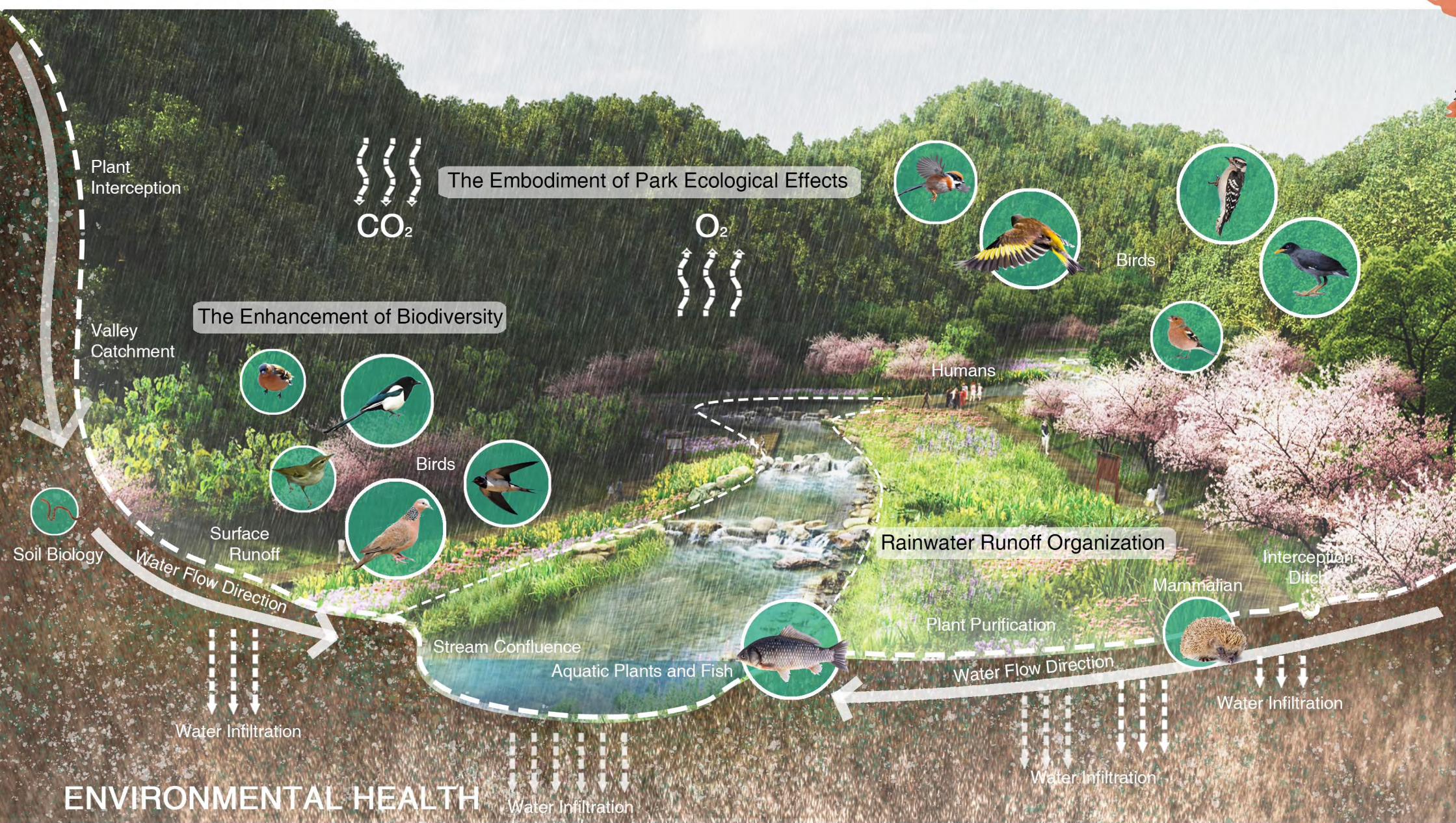
The Abandoned Forest Theater

Preservation and Updating of Existing Facilities

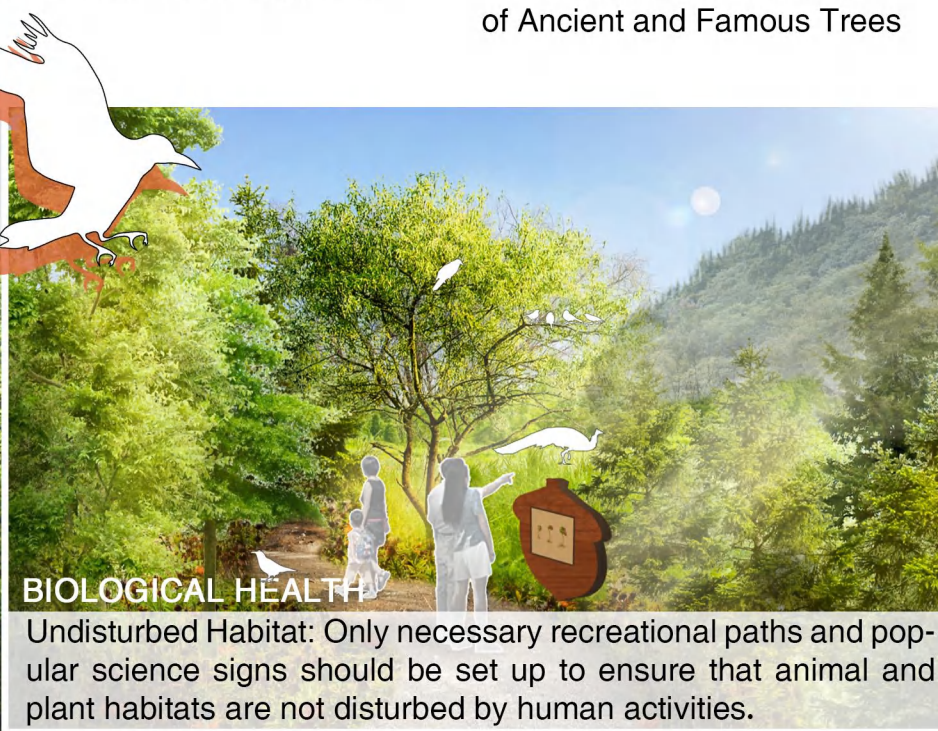
General'S Hand Planted Cypress

Protection and Utilization of Ancient and Famous Trees

HEALTHY SCENES OF HARMONIOUS COEXISTENCE BETWEEN ENVIRONMENT, ORGANISMS, AND HUMANS



ENVIRONMENTAL HEALTH



BIOLOGICAL HEALTH

Undisturbed Habitat: Only necessary recreational paths and popular science signs should be set up to ensure that animal and plant habitats are not disturbed by human activities.



PEOPLE-CENTERED HEALTH

Comprehensive Health Improvement: Physical Health+Mental Health+Lifestyle Health+Social Health

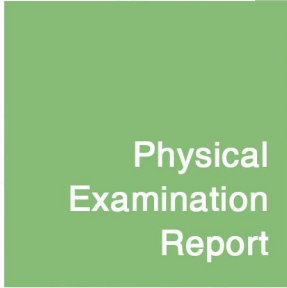
The planning team aims to achieve the construction of a healthy scene through healthy site updates and three dimensions of health improvement, and to achieve harmonious coexistence between humans and nature in Dacheng Mountain Park. The goal is to make people, organisms, and the environment healthy.

11 MECHANISM OF MULTI-PARTICIPATION

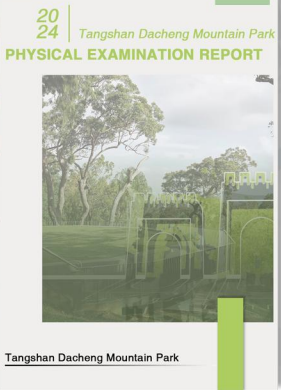
WORKFLOW



Preliminary Research



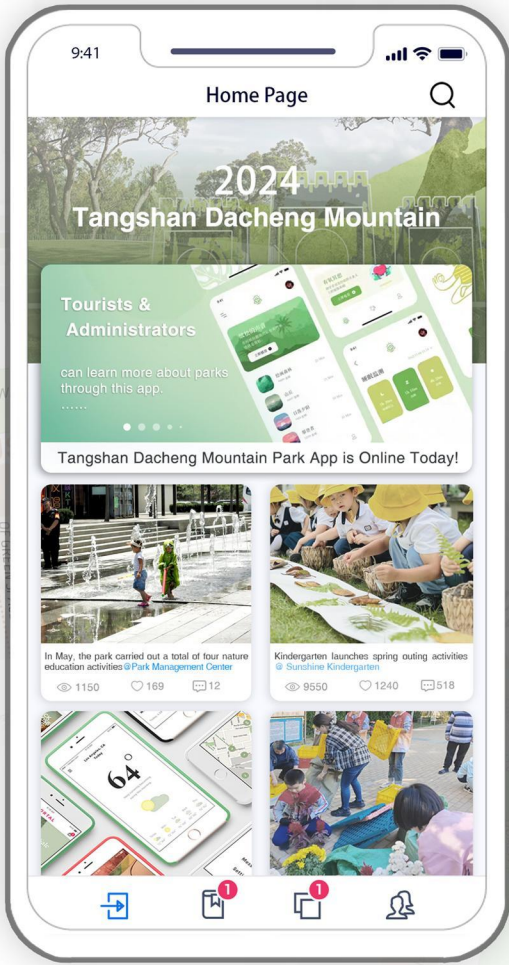
Physical Examination Report



Plan Generation

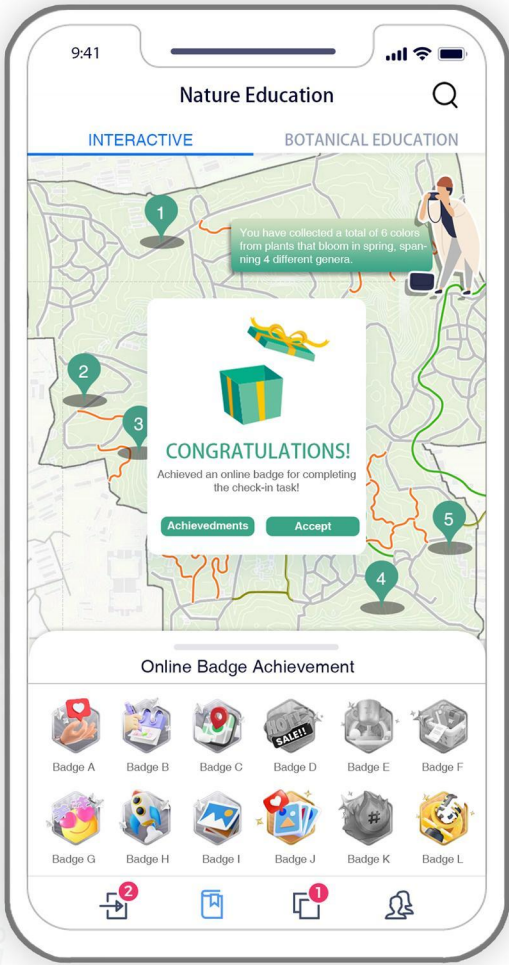
ONLINE

• PUBLIC PARTICIPATION



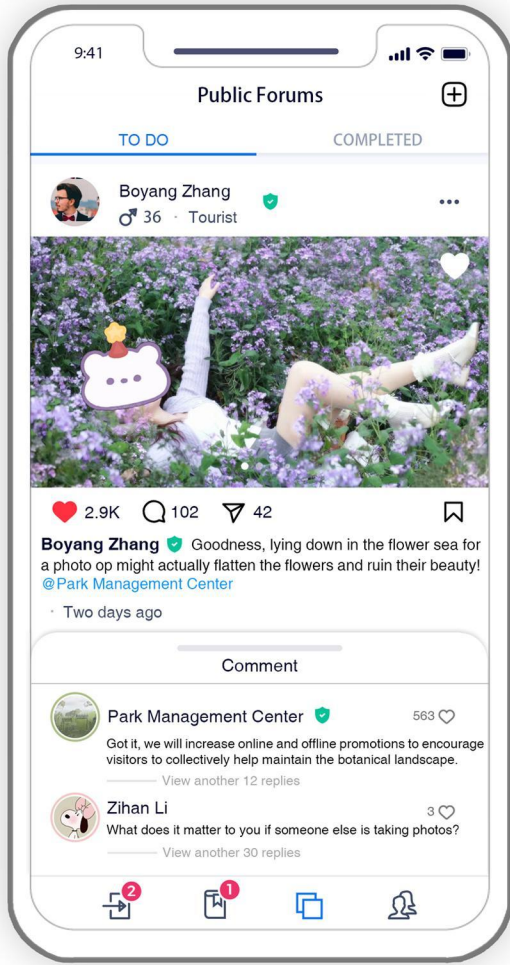
HOME PAGE

Display park news, and nature observation notes to keep users engaged with the latest from the park.



NATURE EDUCATION

The public can complete various check-in activities through the app to earn electronic badges.

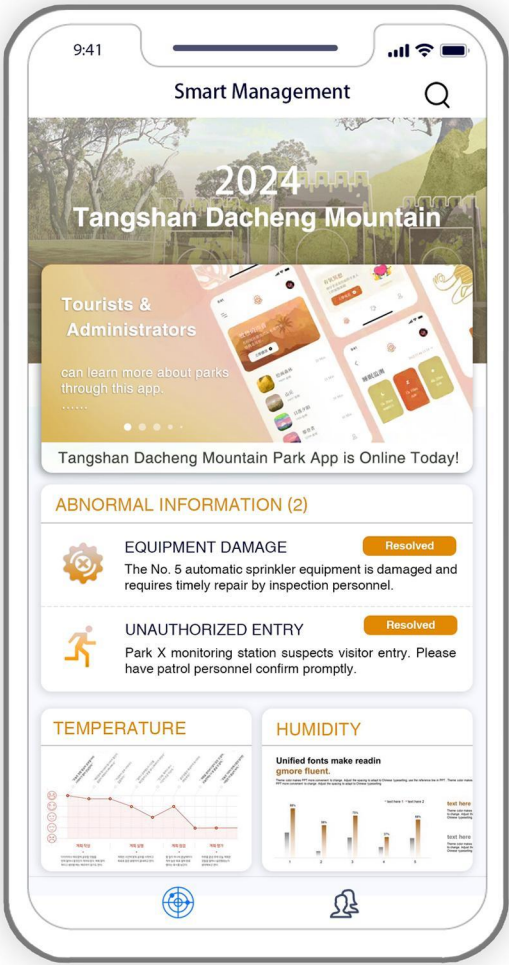


PUBLIC FEEDBACK

The public can post on the forum within the app to share their opinions and suggestions about the park.

ONLINE

• SMART MANAGEMENT



HOME PAGE

Park management personnel can use the app for intelligent monitoring and maintenance of the park.

ONLINE

• PUBLIC PARTICIPATION



Nature Education

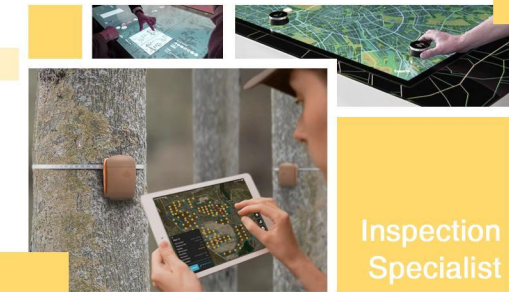
Public Feedback



The public can provide suggestions via message boards and physical suggestion boxes.

OFFLINE

• SMART MANAGEMENT



Inspection Specialist

Park management personnel use smart inspection devices.

To construct a dual-axis model of "public participation in park management" and "online-offline engagement," we aim to delineate four core service areas. This model is designed to comprehensively promote the digital transformation of parks and enhance on-site experiences.