

CITY GOOD PRACTICE FOR URBAN NATURE PROGRAM

HOW GUANGZHOU BALANCES NATURE CONSERVATION AND URBAN DEVELOPMENT IN THE RAPID URBANIZATION PROCESS

- **CITY POPULATION:**
19 million
- **CITY AREA:**
7,434 km²
- **BUILT-UP AREA GREEN COVERAGE:**
43.77%
- **PUBLIC PARKS:**
1,426
- **WETLAND ECOSYSTEMS:**
69,500 hectares
- **GREEN NETWORK:**
ca. 5,000 km

This good practice note was prepared by Guangzhou Municipal Planning and Natural Resources Bureau and Guangzhou Urban Planning & Design Survey Research Institute (GZPI) with input from Xueman Wang, the Global Platform for Sustainable Cities (theGPSC.org) at the World Bank.



BACKGROUND

Located in the center of the Guangdong-Hong Kong-Macao Greater Bay Area in southern mainland China, Guangzhou is situated in the transitional zone between the Nanling mountain range and the Pearl River Delta plain. The mountainous vegetation in the north, the plain and water network in the middle, and the coastal mangrove wetlands in the south jointly form the basic framework of Guangzhou's ecosystem. Ecological spaces such as forests, water bodies, and farmland cover more than 70% of the city's area. Its superior natural and geographical conditions have created abundant biodiversity resources. Guangzhou is located in one of the 34 global biodiversity hotspots and is also an important node on the "East Asia-Australasia" flyway, one of the nine major bird migration routes globally. Compared with other megacities in China, Guangzhou leads in ecological competitiveness.



CHALLENGES

In the context of rapid urbanization, balancing development and conservation is a common challenge faced by Guangzhou and all megacities worldwide:

CHALLENGE 1:

Urban spatial expansion and fragmentation of ecological spatial patterns. Over the past few decades, Guangzhou's urbanization process has accelerated, with a rapid expansion of built-up areas. This has led to a sharpening contradiction between land supply and demand, and ecological spaces have been increasingly occupied and eroded.

CHALLENGE 2:

Increased urban resilience risks in the context of global climate change. While the economy continues to grow rapidly, urban ecological security issues caused by extreme weather such as the urban heat island effect, sea-level rise, and heavy rainfall and flooding have begun to emerge prominently.

CHALLENGE 3:

High-quality industrial development and the demand for richer recreational spaces for human settlement environments. Currently, Guangzhou's urban competitiveness ranks among the top cities globally. With growing citizen demand for higher-quality spaces, further natural solutions are needed to enhance the quality of the urban human settlement environment.



ECO-PLANNING PRACTICES

01 PART

TERRITORIAL SPATIAL PLANNING: ESTABLISHING URBAN ECOLOGICAL NETWORK SYSTEM

Ecological spatial pattern optimization and ecological protection and restoration are considered fundamental safeguards for urban development and are incorporated into Guangzhou's territorial spatial master plan for comprehensive consideration.

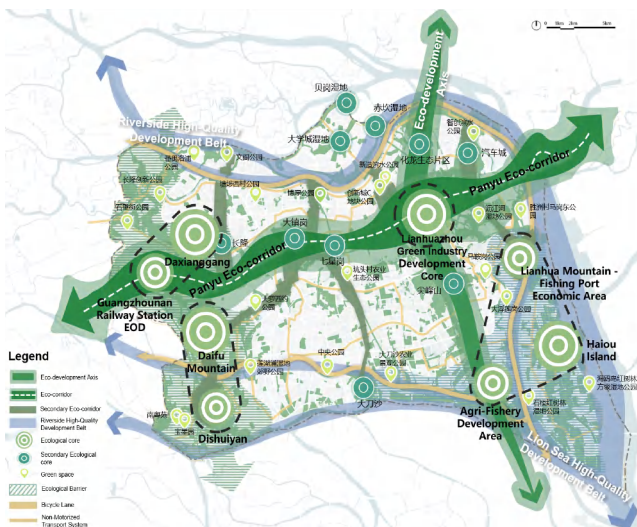
The planning conducts ecological assessments based on Guangzhou's ecosystem characteristics, biological "habitat-migration" behavior processes, and water environments, identifying key ecological function areas, ecological corridors, ecological pollution risk areas, and areas with declining ecosystem functions. Subsequently, it delineates Guangzhou's ecological network structure in a hierarchical and categorical manner, clarifying the three kinds of spatial control areas including important ecological zones, farmland protection zones, and urban development zones. Tailored ecological restoration measures, such as biodiversity enhancement, water conservation, and non-point source pollution prevention and control, are formulated for different habitat characteristics, including mountains, forests, farmland, and coastlines, to strengthen ecological security barriers and enhance ecosystem functions. Additionally, from the perspective of harmonious coexistence between humans and nature, the planning proposes special constructions such as urban ventilation and cooling systems, greenway and park recreation systems, and sponge cities to enhance urban resilience and optimize the living environment.



02 PART

GREEN INFRASTRUCTURE PLANNING: ECO-ORIENTED DEVELOPMENT PROMOTING CO- PROSPERITY BETWEEN THE CITY AND GREEN SPACES

Guangzhou has selected Panyu District to carry out green infrastructure planning, setting multiple planning indicators from aspects such as natural ecological service functions, urban resilience, human-centered health, and supporting high-quality development. By connecting green infrastructure through a slow-moving system network, a safe, healthy, and beautiful blue-green ecological network system is constructed through three major strategies: strengthening protection and restoration, improving the recreation network, and promoting green construction:



1

Strengthening Protection and Restoration:

Enhance the construction of water systems and shorelines, wetlands, and sponge cities, protect important habitats and migration corridors, and improve ecosystem diversity, stability, and sustainability.

2

Improving the Recreation Network:

Construct a multi-level park system, enhance the quality of open spaces, and create an 81-kilometer slow-moving greenway network connecting mountains to the sea.

3

Promoting Ecological Restoration Projects:

Highlight the traditional culture of Lingnan water towns, promote the construction of specialized plant display gardens and ecological science popularization and education sites, and construct green communities, green industrial parks, and green gray infrastructure through methods such as rooftop greening and the integration of green pocket spaces.

ECOLOGICAL CONSERVATION AND RESTORATION PRACTICES

01 PART

HAIZHU WETLAND: A LARGE ECOLOGICAL RECREATION SPACE IN THE URBAN CENTER

Haizhu Wetland, located in the central urban area of Guangzhou City, experienced ecosystem degradation due to urban expansion. Adhering to the principles of "preserving the original ecology, making minor modifications, and minimizing intervention," Haizhu Wetland has established a complete and healthy ecosystem through three major ecological restoration strategies. It has progressively developed into the largest and most preserved urban wetland park in the central district of a megacity in China.



Restoring Pathways for Fish

By dredging the wetland's water network and restoring tidal processes, the original "farming paths" walked by humans in the rice fields have been transformed into hidden "fish passages" for biological survival. Nutrients are replenished by tides, increasing fish species from 36 to over 60.

Restoring Habitats for Birds

Based on the body size and behavioral patterns of waterbirds, the bird island and surrounding waters have been modified to increase the area of bird habitats and food sources, making Haizhu Wetland an important stopping point on the international migration route for birds.

Create eco-benefit for people

Haizhu Wetland pioneers a new model for harmonious development between wetlands and local communities, engaging 200 locals in wetland habitat conservation. Multiple nature education programs have been established to raise public awareness of ecological preservation.

02 PART

NANGANG RIVER IN HUANGPU: ECOLOGICAL LANDSCAPE RESTORATION AND ENHANCEMENT IN INDUSTRIAL AREAS

Flowing through industrial clusters, the Nangang River once faced ecological challenges including declining water quality and siltation. During the subsequent restructuring and upgrading of the industrial zones, ecological restoration was integrated into the river's revitalization. The rehabilitation strategy featured two key approaches: implementing a sponge ecosystem to enhance flood resilience through nature-based solutions, while simultaneously establishing 24 habitat types along the river corridor to improve aquatic ecosystems, create breeding grounds, and facilitate the return of native species.

At the present time, the Nangang River, with its pristine natural landscape, attracts numerous high-tech talents to the surrounding electronic industrial parks. Within the watershed, over 1,300 large and medium-sized enterprises and eight national-level innovation industrial parks, including Huangpu Lab, have settled in, making it the most vibrant technological innovation belt in eastern Guangzhou.



03 PART

ADONG RIVER IN CONGHUA: ECOLOGICAL EMPOWERMENT FOR COMMUNITY CULTURAL TOURISM DEVELOPMENT

Situated in an ecologically rich area, Yadong River has become a catalyst for tourism development through its pristine landscapes during the revitalization of surrounding communities. Prioritizing the preservation of natural authenticity, local authorities have upgraded the river corridor into green banks, ecological wetlands, and water-front promenades, restoring natural shorelines while creating premium recreational spaces.

The riverside communities now attract substantial tourist traffic, tripling the annual collective income of local villages from 300,000 to 900,000 yuan. This transformation demonstrates the harmonious integration of ecological conservation and socioeconomic progress.