

Urban Design of Tianfu Chinese Medicine City from the Perspective of Park City

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Abstract: With the significant improvement in people's material living standards, as well as the impact of various issues such as the pandemic, food safety, and obesity in recent years, a healthy, secure, and quality spiritual well-being life has become what people pursue. Liu Guanzhong once proposed that addressing the living needs of China's people and guiding healthy lifestyles is what defines beauty. Therefore, it is essential to implement urban planning and construction that highly aligns with the healthy development concepts and lifestyles of city dwellers, adhering to a people-oriented approach to ensure that China's citizens possess material spaces for urban healthy spiritual lives. During his February 2018 inspection tour in Chengdu, the importance of highlighting the characteristics of park cities was emphasized by the Chinese official government while incorporating ecological values, marking the first official proposal of this concept. Over the past four years, numerous cities have actively explored park city planning and construction. As an integral part of Chengdu's urban development, Tianfu Traditional Chinese Medicine City has received high-level attention from municipal authorities. Through proactive organization and in-depth research, the "Urban Design for the Science and Technology Innovation Center Area of Tianfu Traditional Chinese Medicine City" was successfully completed to high standards. This paper examines the urban design process, summarizes its implementation progress, and proposes practical suggestions for spatial planning and design that promote healthy lifestyles under the park city framework.

Keyword: Health planning; Park city; Traditional Chinese medicine city; People-oriented

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1. Research background

This year marks the 10th anniversary of the World's Happiest Countries Ranking Report. Drawing on survey data from approximately 150 countries, the "2022 World's Happiest Countries Ranking Report" places China at 72nd globally, with the living well-being of the Chinese people rising once again. It should be noted that through national efforts and under the conditions of substantial enrichment in material and cultural development, people's sense of happiness has gradually improved in recent years. The country has placed high emphasis on spiritual civilization construction, promoted ecological civilization, and facilitated the formation of healthy lifestyles

among the populace, achieving certain accomplishments. Currently, the principal contradiction in Chinese society has evolved into the conflict between the people's growing needs for a better life and unbalanced and inadequate development. To meet the people's growing demands for a fulfilling spiritual life and advance the quality improvement of spatial development, it is particularly crucial to enhance urban spatial planning and promote the formation of healthy lifestyles.

During his February 2018 inspection tour in Chengdu, the importance of highlighting the characteristics of park cities was emphasized by the Chinese official government while incorporating ecological values. Ecosystems consist of various individuals and organizations that have to collaborate in order for projects to succeed^[1]. As an advanced urban development model embodying new development concepts, the project portfolio of park city construction in Chengdu incorporates people-centered spatial planning theories that prioritize human-centric development throughout the collective wisdom and efforts of the government, citizens, designers, and builders. The construction project has achieved remarkable results.

2. Explore the purpose and significance of Tianfu Chinese Medicine City urban design practice from the perspective of park city

Chengdu, a pivotal regional hub in western China, serves as the cornerstone of the Chengdu-Chongqing Economic Circle's "One Pole, Two Centers, Two Cities" strategic framework. The city is driving high-quality development through its flagship initiative to establish a model park city embodying innovative development concepts, with ambitions to become a national central hub, an eco-friendly, livable park city, an international gateway, and a world-renowned cultural metropolis. Pengzhou City, Chengdu's northern gateway and an innovation-driven green industrial base along the Longmen Mountain foothills, is implementing Chengdu's "West Control" and "North Transformation" policies while aligning with its industrial development strategy. By prioritizing green industries, including cultural innovation, landscape agriculture, leisure sports, wellness tourism, and sustainable food production, Pengzhou is building a regionally distinctive spatial planning system centered on human needs. As the core area for developing Pengzhou's traditional Chinese medicine industry, Tianfu Traditional Chinese Medicine City leverages its advanced herbal medicine expertise and unique geographical-cultural environment to have established a complete industrial chain ecosystem. This foundation provides valuable conditions for enhancing public health, spiritual fulfillment, and balanced urban development. Guided by this human-centric vision, Tianfu Traditional Chinese Medicine City has formulated the "Urban Design for the Science & Technology Innovation Center Zone" (hereafter "TCZ Plan"), steadfastly pursuing a wellness-oriented park city development path.

This paper explores spatial design methodologies for Tianfu Traditional Chinese Medicine City. By analyzing ecological, cultural, commercial, and morphological dimensions to formulate corresponding planning strategies, it provides actionable recommendations for practical spatial planning approaches. The study also proposes optimization measures for future local development, offering guidance for building sustainable, healthy lifestyles through urban planning. Specifically, the paper addresses the following aspects:

Analyze the basic situation of the base and summarize the basic ideas of the completed plan.

Summarize and sort out the specific embodiment of human-centered design and park city concept in the planning of Traditional Chinese Medicine City.

This paper analyzes the key points that can be further optimized in the current planning and design, and puts forward some suggestions.

3. Basic situation and planning ideas of Traditional Chinese Medicine City

3.1. Overview of Traditional Chinese Medicine City

Situated in the southern part of Pengzhou's central urban area, Tianfu Zhongheng City's Happiness Science Park serves as a transitional zone bridging the commercial-industrial core with the new southern city's residential hub. The planned development covers approximately 2.27 square kilometers, featuring minimal existing infrastructure requiring preservation and predominantly undeveloped land. Blessed with abundant natural resources and exceptional ecological foundations, the area benefits from the Liuhe River branch channel running through its eastern side – a vital waterway connecting Pengzhou's north-south axis while acting as an ecological corridor linking key urban districts. To the west, the Chengdu-Pengzhou Expressway provides convenient transportation links, with the Third Ring Road cutting through the site to seamlessly integrate it with other urban areas of Pengzhou.

3.2. Basic ideas of TCM City planning

3.2.1. Implement higher-level and overall guidance

In terms of spatial planning, efforts are being vigorously advanced around the Chengdu Municipal Land Space Planning, Tianfu Traditional Chinese Medicine City Science and Technology Innovation Master Plan, and “Tianfu Traditional Chinese Medicine City Science and Technology Innovation Central Area Control Detailed Planning.” It is essential to systematically consider the functional layout of the environment and industry, using corridors as the framework to build foundations, weave waterways into belts, and stitch textures to form a rich open-space system. High standards and strict requirements are applied to create an urban space that prioritizes ecological sustainability, comprehensive innovation, and abundant vitality.

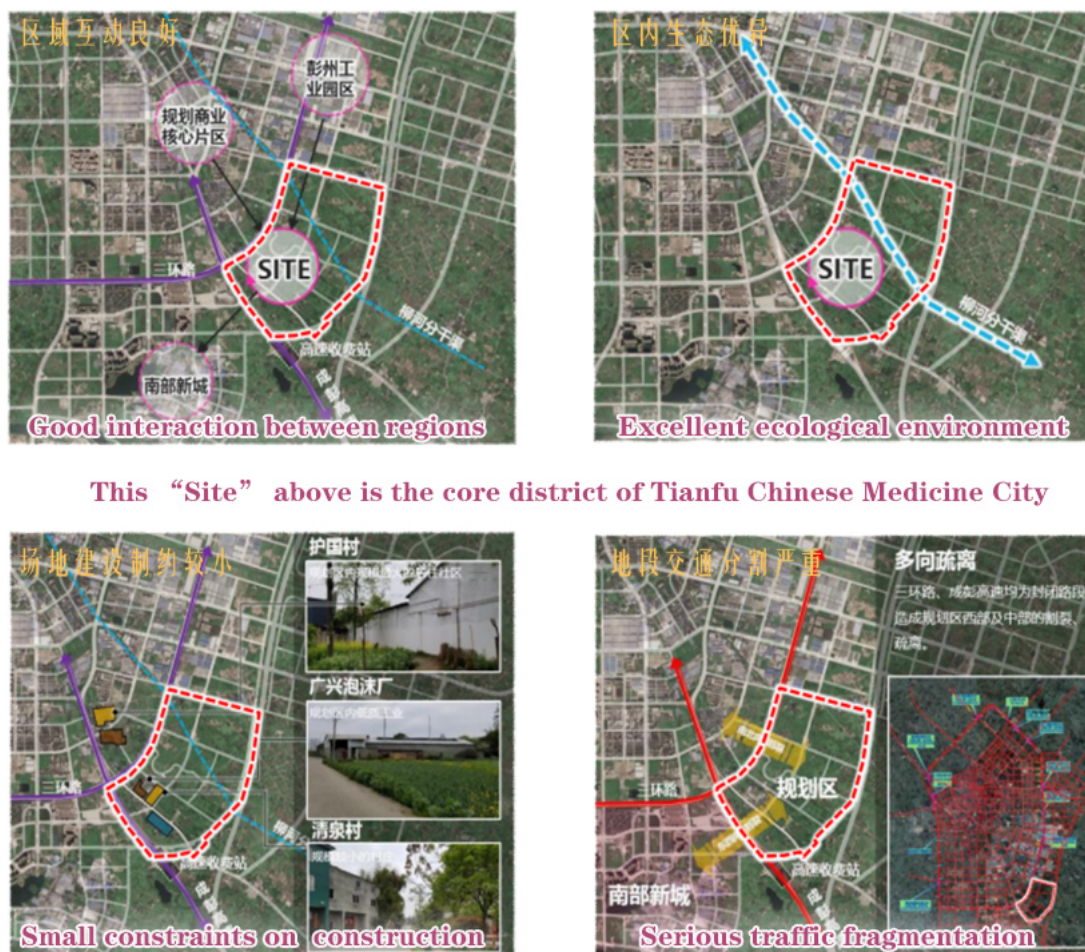
Spatially, four leading technological tracks are realized through innovation-led zones, while integrated development zones improve front-to-back-end services and incorporate diverse living scenarios. Culturally, leveraging Chengdu's TOD development theory, the public transportation-first concept is implemented to attract residents, creating park-like, slow-paced lifestyles. The construction of industrial functional zones embodies the “people-oriented” philosophy, shifting from “industry-city-people” to “people-city-industry” urban development logic, forming distinctive human-centric service spaces. The construction of a greenway network is necessary for park city. Greenway optimization is regarded as one of the key approaches to improving urban ecological quality^[2]. Ecologically, a “blue green cross frame” framework serves as the core, as is shown in **Figure 1**, creating boundaryless park districts accessible right at residents' doorsteps.



Figure 1. Ecological design concept of Tianfu Chinese Medicine City

3.2.2. Enrich the foundation and sort out the problems

To achieve successful spatial design, it is essential to thoroughly understand the current situation and existing challenges. During the spatial planning process for Tianfu Traditional Chinese Medicine City, four key aspects were addressed. First, a comprehensive overview was established by compiling data from relevant departments, including population statistics, economic indicators, industrial profiles, and environmental conditions. Through field research, specific points were identified to systematically organize the industrial development chain. Second, community outreach efforts were conducted across streets and households. Given the extensive undeveloped land areas, investigations were carried out regarding the impact of developed enterprises and industries, as well as the living conditions of surrounding residents and transportation infrastructure. Third, focused analysis was performed on the ecological environment and cultural context, encompassing water systems, vegetation, natural conditions, and a comprehensive evaluation of terrain features. Cultural foundations and related heritage elements were also integrated. Finally, based on documented information, characteristic issues were categorized and analyzed in detail to identify existing problems (**Figure 2**), laying the groundwork for subsequent solutions.



This “Site” above is the core district of Tianfu Chinese Medicine City

Figure 2. Ecological design concept of Tianfu Chinese Medicine City

3.2.3. Seize positioning, build characteristics

Park city, as a nature-based solution (NBS) in the process of urban transition, addresses key challenges in green space management, such as insufficient ecosystem services and unequal distribution of public resources ^[3]. The

master plan has established the Tianshui Traditional Chinese Medicine City as a hub for revitalizing and upgrading traditional Chinese medicine, while positioning it as a demonstration zone for health industry integration that integrates public services in accordance with natural local conditions, serving as the incubation core and supporting area for Tianshui Traditional Chinese Medicine City. In practical implementation, focusing on the distinctive core of a demonstration city integrating traditional Chinese medicine with education, the city has formulated three-phase development goals (short-term, medium-term, and long-term). Specific strategies include functional refinement, land optimization, spatial enhancement, and project execution. On one hand, the city systematically improved infrastructure design; on the other, the city shaped open urban spaces through the “park+” concept. By designing urban landscapes based on environmental considerations and creating iconic landmarks, designing a construction landscape centered around the lake, as shown in **Figure 3**, these efforts have laid a solid foundation for cultivating a unique cultural identity and ensuring sustainable urban development.



Figure 3. Schematic diagram of the Huitong Lake shoreline effect

3.2.4. Improve configuration with a humanistic orientation

Guided by the “people-oriented” urban development philosophy of “people-city-industry integration”, the city will enhance service infrastructure through coordinated industrial-urban growth. This approach promotes concentrated population and industrial clusters in designated functional zones, effectively balances employment and residential needs, and fosters local consumption among enterprises and residents within industrial chains. By transitioning from a “production-city-people” model to a “people-city-industry” framework, the city aims to build cities that fully embody new development concepts. Focusing on creating multifunctional industrial zones with balanced employment-residence ratios, comprehensive services, and eco-friendly living environments, the city will intensify efforts to improve supporting facilities and complete high-quality public service configurations. Through systematic categorization of key urban nodes across districts, the city will develop distinct spatial patterns by strategically shaping different types of urban development.

4. Implementation based on the spatial planning characteristics of park city

The concept of a park city is an emerging value system that aligns with future development. It not only fulfills the

core principle of “people-centered” development but also promotes healthy lifestyles among citizens, contributes to ecological civilization construction, and enhances Chengdu’s functional requirements within the Chengdu-Chongqing metropolitan area and the Belt and Road Initiative. The Traditional Chinese Medicine City Plan has effectively implemented some of these concepts, which will be systematically reviewed here.

4.1. Build a “blue and green double cross” to lay the foundation for clear waters and green mountains

The concept of a park city emphasizes the ecological value of green mountains and clear waters, with the planning and construction of ecological spaces serving as foundational work. During urban design phases, the specific creation and shaping of spatial configurations constitute fundamental requirements. The “Traditional Chinese Medicine City Plan” conducted a rigorous analysis of natural resources within the planning area, implementing the “Blue-Green Dual Cross” framework to scientifically connect water bodies and green spaces, forming an integrated green system. Building upon existing ecological green spaces, the plan introduces expansive green areas to create future green corridors through permeable design, water conservation measures, and scientific land management. This establishes a “green doorstep” system extending from streets to households, featuring urban green spaces at different scales (points, lines, surfaces) that provide material conditions for healthy living. The plan further develops lake areas based on data from 2018 precipitation records, evaporation rates, and Liu River water consumption, constructing an ecological shoreline model. Analyzing water level variations and calculating required lake surface elevations provides valuable baseline data for subsequent construction. Backed by the Longmen Mountain Range, this green-water system planning lays a solid foundation for the sustainable development of the park city’s ecological environment.

4.2. Improve the industrial development system and consolidate the pillar of the new town of Traditional Chinese Medicine

High technical costs, administrative barriers, and the lack of long-term governance mechanisms remain critical challenges of park city^[4]. The concept of the Traditional Chinese Medicine (TCM) City, whose framework is laid out in **Figure 4**, emphasizes the economic value of green and low-carbon development, advocating eco-friendly production methods for economic growth. Given that the area already hosts leading TCM manufacturers and has produced nine varieties with annual sales exceeding 100 million yuan, the city will strategically plan industrial chains to establish a complete TCM industry system. This initiative aims to achieve three key upgrades: industrial transformation, resource integration, and quality enhancement. The city will upgrade core industries to create standardized, medical-oriented next-generation TCM clusters, introduce related equipment manufacturing and health product industries to expand the healthcare ecosystem, and develop emerging services like modern wellness and medical aesthetics centered on TCM principles. Following national strategies for TCM and health industry development, the city proposes a “1+1” innovation-driven spatial framework where TCM’s R&D chain and health application chain form the foundation for the city’s sustainable growth.

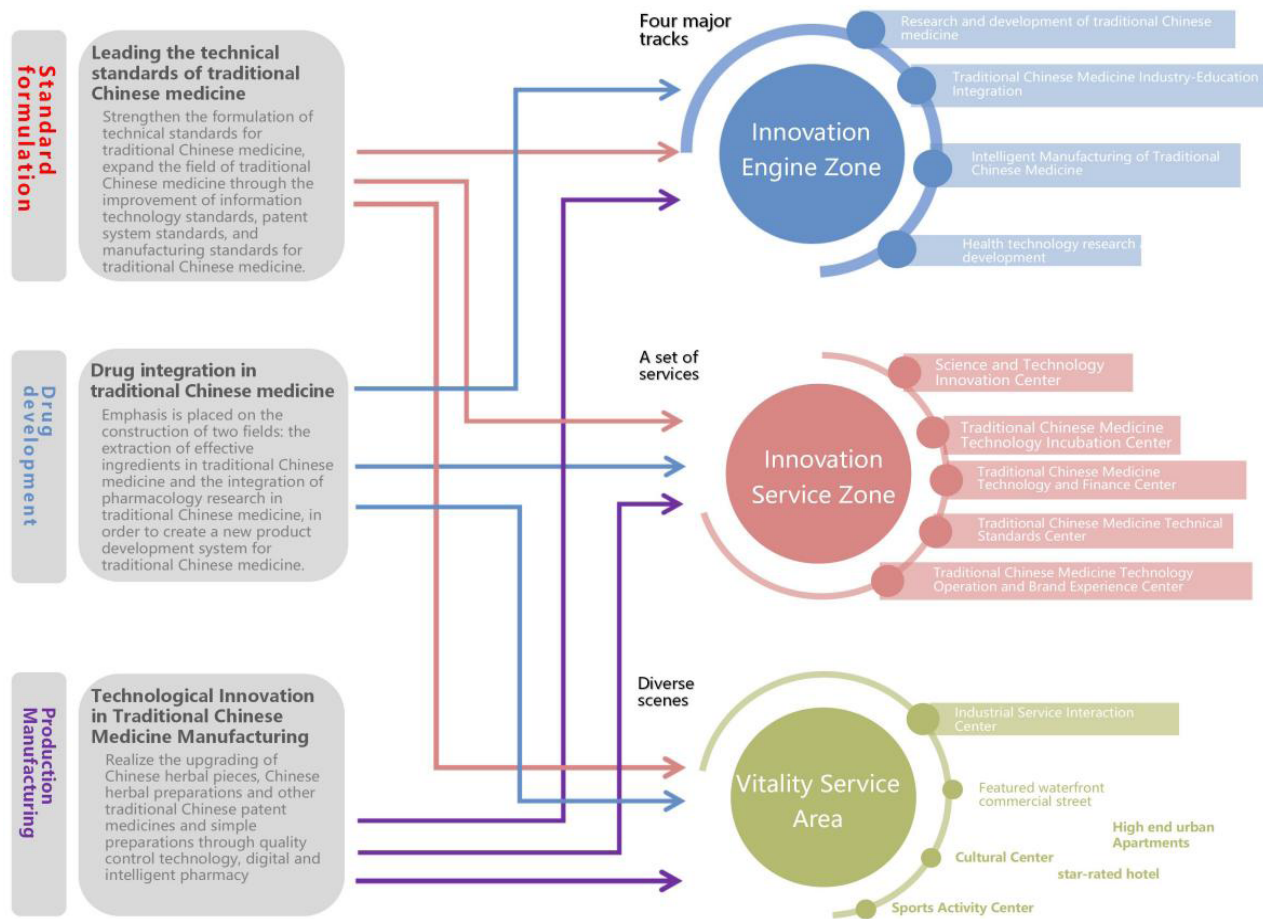


Figure 4. Schematic diagram of industrial layout

4.3. Determine the urban landscape system and build up the traditional ridge of Shuchuan

The park city emphasizes the aesthetic value of poetic dwelling. In the “Traditional Chinese Medicine City Plan”, efforts are made to fully restore the Tianfu characteristics, starting from the traditional Shu-Chuan cultural essence and rhythmic landscape features to design urban appearance. The overall architectural layout highlights the philosophy of organic integration between solid and void through “layered mountains and mirrored waters, staggered arrangements.” Four spatial strategies—vertical axis, focal points, silhouette shaping, and text painting—are employed to shape the mountain-water urban imagery embodying “Tianfu Rhythm.” Following two major cross-axis principles, seen in **Figure 5**, four core gateway nodes are established with controlled building heights and rational arrangement. Adhering to Shu-Chuan cultural arrangements, distinctive urban spaces are designed to accommodate human activities across various landscapes, aggregating cultural flows and attracting social connections. This creates material spaces fulfilling diverse spiritual needs, forming Sichuan’s spatial beauty while aligning with the requirements of a park city demonstration zone that integrates urban environments with natural acoustic systems.

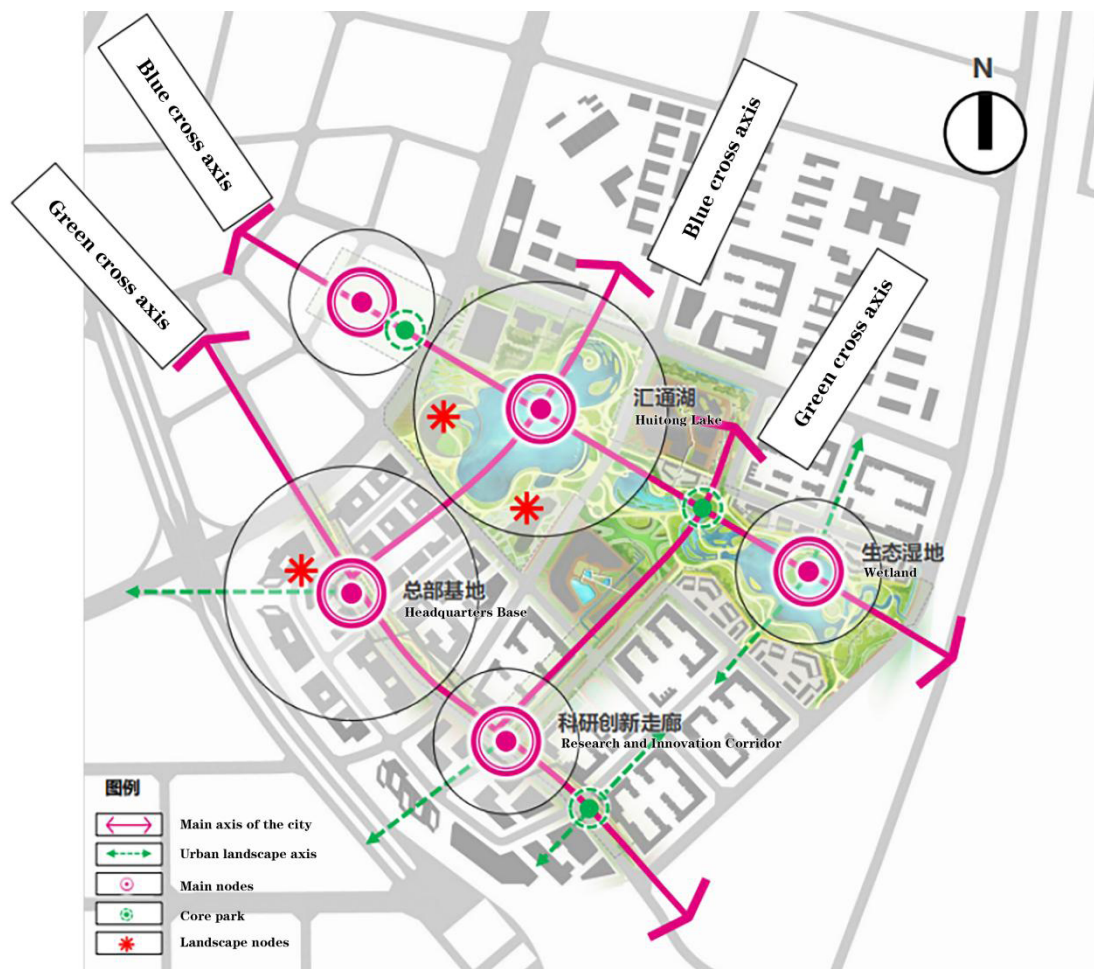


Figure 5. Axis layout diagram

4.4. Promote human-centered health integration with the city and repair the back of healthy living

The park city emphasizes the value of a simple yet healthy lifestyle. In the “Traditional Chinese Medicine City Plan”, the people-oriented development philosophy of industry and urban integration is applied to create spatial nodes that foster healthy living environments. The plan organizes three key components: urban service centers, vibrant service belts, and community service hubs. Centered around Huitong Lake, the layout integrates living and production spaces with architectural designs harmoniously blending into the ecosystem. Maximizing the lakeshore landscape interface, multiple distinctive open spaces are developed along the shoreline, offering diverse experiential activities throughout the day and forming multifunctional service areas for Pengzhou residents. A dynamic service belt surrounding wetland landscapes features high-quality wetland axes flanked by residential waterways, industrial waterways, urban apartments, and specialty hotels, catering to the varied needs of corporate professionals for daily life, social interaction, and leisure. The “boundaries” —urban motor roads—are softened through integrated design, merging buildings with wetland parks to achieve harmony between people, architecture, and nature. Two community service clusters are formed around the wetlands, with community service centers located at cluster cores or main entrances, adjacent to nearby primary schools connected via pedestrian pathways. These clusters serve as integrated service platforms combining cultural, commercial, educational, medical, and

sports functions. Ultimately, through the development of key nodes, the district achieves a multi-tiered urban living environment that prioritizes healthy lifestyles.

5. Innovative optimization concept under the park city concept

5.1. Key points that can be deepened at present

It should be noted that the spatial planning and design of Tianfu Traditional Chinese Medicine City has been well-developed, serving as a model for related urban development. This framework provides spatial guidance for building a high-quality park city, strategically positioning the health industry, and enhancing residents' quality of life. However, there remains room for refinement in both the conceptual planning of healthy living initiatives and the implementation of the park city concept. These aspects warrant further enhancement in subsequent planning and concrete construction phases. The following discussion will detail specific areas requiring improvement within this existing plan.

The “Herbal Medicine City Plan” demonstrates profound respect for ecological foundations and local ecology. While harmonizing with nature, it creates environments of exceptional aesthetic value and poetic ecology, embodying the concept of a park city and promoting healthy living. Although this vision has been implemented in the planning process, further refinement is possible. First, economically, integrating environmental science could form an “industry-environment+” economic model. Incorporating water conservation into green axis economic ecosystems would optimize low-carbon practices while enhancing public awareness of eco-friendly lifestyles. Second, smart spatial design strategies could streamline industrial chains and residential services, alleviating work-life stress and fostering healthier living attitudes. Third, cultural development needs enhancement. Current guidelines lack depth in exploring distinctive cultural elements and humanistic values, requiring systematic integration of cultural guidance throughout the project.

5.2. Specific optimization methods

5.2.1. A comprehensive system of “sponge” + economic conservation + suburban park can be cast

The Tianshuangzhongcheng Pharmaceutical City, with its terrain and geomorphology characteristic of the Chengdu Plain, centers on the planning of its traditional Chinese medicine industry and environmental development. By leveraging existing plains and sponge city principles, it creates distinctive natural landscapes and a sustainable “industry-environment+” model—a crucial approach in similar water ecosystem urbanization projects. The overall layout of the city is shown in **Figure 6**. Through current water circulation planning and sponge infrastructure utilization, the city establishes ecological water cycles, improves soil quality, and develops cost-effective urban economic models. Characteristic leisure facilities, entertainment venues, office spaces, and community interaction areas form an integrated water conservation system that extends to individual households. This promotes shared water resources, enriched courtyard environments, and plant maintenance cost savings. Architectural innovations include rainwater harvesting tanks, flower bed water collection systems, garden infiltration upgrades, automated irrigation controls for water-cycling lawns, and humidity monitoring technologies—all reducing operational costs while enhancing landscape diversity and water reuse efficiency. The water network conserves green spaces along main axes, ensures economical water utilization, and creates multi-layered urban park complexes shown in **Figure 7**.



Figure 6. Schematic diagram of Internet of Things connectivity

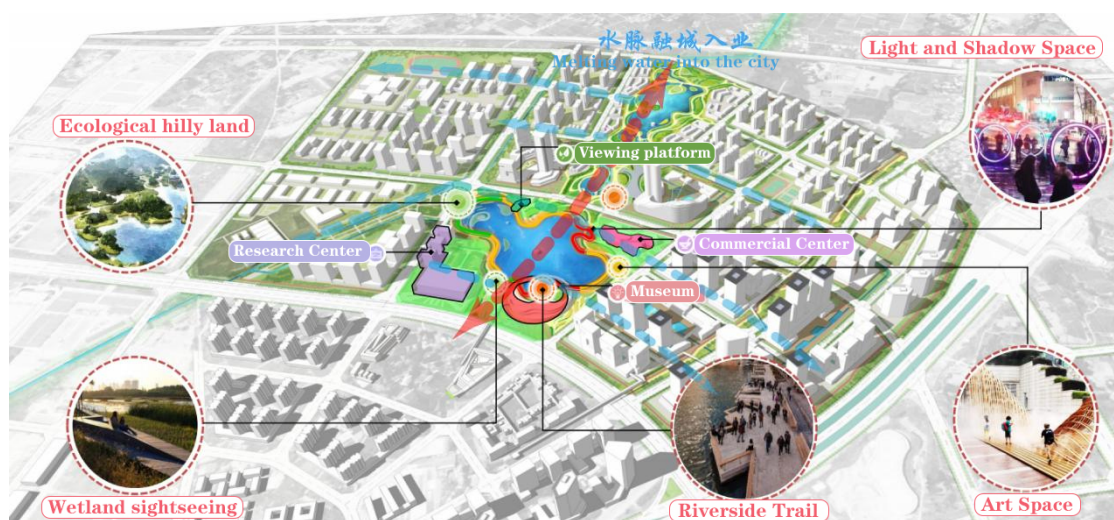


Figure 7. Schematic diagram of a water vein integrating the city into the industry

5.2.2. The development of the industrial chain should reflect the concept of a smart city

To advance the development of smart urban-rural spatial planning and guide the intelligent transformation of Traditional Chinese Medicine City, comprehensive industrial chain planning has been established. While implementing urban-industrial integration requirements, the city has clarified functional roles, defined development directions, analyzed market demands, and optimized industry layouts. However, beyond basic elements, specific smart construction guidelines should be formulated to enhance distinctive features in modern industrial chains, thereby promoting the spiritual core of healthy lifestyles. In-depth research on model-oriented strategies is essential, including systematic proposals for smart policies in key industries, talent recruitment measures, and safeguarding mechanisms. Innovative planning approaches should be adopted to broaden talent

perspectives, develop strategic packaging methods to activate dormant resources, and conceptualize concrete “Internet+” models. Within industrial smart planning frameworks, measures such as WiFi coverage, IoT-enabled logistics, intelligent production systems, site recommendations, and multimedia promotion should be implemented to empower urban development with the transformative potential of 5G+ technologies.

Regarding implementation strategies, China’s ICT sector demonstrates robust technological development, serving as a crucial tool for building smart urban-rural spaces. Key initiatives include: 1) Establishing specialized IoT infrastructure for direct sales of traditional Chinese medicine products. This involves developing an IoT platform that integrates with government service systems while meeting NSSP security standards, creating a digital ecosystem encompassing product operations, manufacturing, services, and management. 2) Organizing cultural events featuring TCM heritage. Targeted exhibitions will debut in neighboring cities, followed by scaled-up promotion through online platforms leveraging IoT and 5G technologies to establish provincial-level cultural landmarks for sustainable growth. 3) Conducting three rounds of live-streaming campaigns targeting local residents, businesses, and stakeholders. 4) Developing educational zones and smart navigation systems aligned with botanical seasons. Seasonal medicinal education programs and online cultivation tutorials will be introduced for industry professionals. 5) Advancing intelligent architectural design. Building upon the Smart Transportation Network outlined in the Traditional Chinese Medicine City Plan, the city will enhance interactive experiences in building spaces through human-centered principles, improving their sustainability.

5.2.3. The health cultural context should be strongly reflected

Park cities emphasize the humanistic value of cultural edification. While the “Traditional Chinese Medicine City Plan” has conducted cultural organization and implemented spatial controls for spiritual lineage, architectural style, and landmarks, there remains a gap in planning for cultural product development and historical preservation. The overall direction of architectural style and urban environment is entirely correct. During the deepening of planning and construction processes, TCM culture should be integrated into core planning frameworks, serving as the guiding theme of health culture lineage. The traditional wellness philosophy—harmony between heaven and humanity, reverence for nature, prevention-first approach, and integration of medical care with elderly care—should be incorporated into smart city development. This cultural thread should manifest in key urban nodes, landmark details, small-scale facilities, and industrial park enterprises. Some urban parks should adopt TCM wellness themes, which could become official names. By organizing and developing these themes, a comprehensive promotion network and spatial display elements for wellness spirit and health wisdom can be established, significantly enriching the cultural connotation of wellness education and playing a positive role in further urban development.

6. Summary

This paper summarizes the specific measures and approaches of the “Traditional Chinese Medicine City Plan”, reviews the concepts, methods, and effects of urban design from the perspective of park cities, and further analyzes key points requiring deepening in accordance with the requirements of park city construction and the people-oriented philosophy. It proposes further improvement measures. It can be said that the “Traditional Chinese Medicine City Plan” has laid the foundation for achieving a territorial spatial pattern characterized by intensive and efficient production spaces, livable and moderate living spaces, and ecological spaces featuring clear mountains

and clean waters, as well as safe, harmonious, open, efficient, and charming quality landscapes. Furthermore, it has added a significant stroke to realizing the concept of park cities and fulfilling Chengdu's mission as a comprehensive window region for the "Belt and Road." In the next phase of construction, if the city can integrate the content of this paper, carefully consider relevant suggestions, closely link people's healthy development with the people-centered development philosophy and spatial planning design, and implement them effectively, the city will surely enhance the city's ecological vitality and build an excellent new traditional Chinese medicine city!

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