

Practical Experience of Management of Urban Parks at Home and Abroad

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Abstract By systematically reviewing the practical experience of management of urban parks at home and abroad, the advanced experience in organization, management system, operation mechanism and social participation were summarized, and the optimization and improvement measures for the construction and management of urban parks in Chengdu were proposed to provide reference for the high-level construction, high-quality experience and efficient management of urban parks in the construction of park city demonstration zone in Chengdu.

Key words Urban parks; Management and operation; Domestic and foreign experience; Chengdu; Park city

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Urban parks play the dual role of ecology and life. They are not only an important ecological base of a city, but also the most daily green public space to meet people's high quality life. With the rapid development of China's economy, the number of urban parks as public products is increasing day by day, and parks have become an important indicator of the quality of urban construction. In recent years, as "park city" and "harmonious coexistence between man and nature" have become the hot words of urban construction, the construction and management of parks have also become one of the key areas of urban work. Shanghai, Shenzhen and other cities clearly define the goal of building thousands of gardens, and there will be more and more parks reflecting the "new concept and model" into the life of the masses in the future. The transformation of urban parks in construction quantity and concept inevitably requires the improvement of park management mode and governance level. However, due to historical legacy and development restrictions, urban parks in China are generally faced with problems such as single construction management subject, shortage of management and operation costs, lack of independent profitability, and imperfect policy and system guarantee. Therefore, it is urgent to carry out research on urban parks and promote the innovative design of construction and management of urban parks in terms of management mode, operation efficiency, quality vitality, system guarantee, *etc.*, so as to meet the needs of the people for a better living environment and the requirements of urban governance modernization in the new era^[1–3]. At the same time, in March 2022, the State Council officially approved Chengdu's construction of a park city demonstration area to practice the new development concept, giving Chengdu an important mission to ex-

plore the new practice of harmonious integration of mountains, rivers, people and cities and the new path of transformation and development of super-large megacity. Urban parks are an important starting point for the construction of park city, so it is needed to further promote the innovation and exploration of the construction, management and operation of urban parks, so as to provide help for cities to practice the concept that lucid waters and lush mountains are invaluable assets, and achieve high-level construction, high-quality experience and efficient management of parks.

1 Current situation and problems of management and operation of urban parks

As public service products, urban parks have public welfare. While urban parks shoulder a large number of urban service functions, local governments also need to invest a lot of manpower, material and financial resources to support their operation and management. As the owners of urban parks, the relevant government departments can maximize the "publicity" of urban parks, but they also face the limitations of insufficient management mode and market vitality^[4]. According to relevant studies, the current urban parks are generally faced with development difficulties in construction management, sustainable development and institutional guarantee, such as single management body, insufficient linkage between various departments, insufficient management and conservation funds, insufficient independent profitability, imperfect laws and regulations, and imperfect marketization mechanism (Fig. 1). In the latest park design, on the basis of the traditional construction of a large area of exquisite landscape, more emphasis is placed on the interaction between man and nature and the process of economic development and community independent participation. This change is the embodiment of the natural ecological concept of "harmonious coexistence between man and nature" in the new era of ecological civilization, the advance of public life needs to "meet the people's growing needs for a better life", and

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the scientific and refined governance upgrading requirements under the background of urban governance modernization. This iterative

process of the old and new models brings great challenges to the current construction and management of urban parks (Fig. 1).

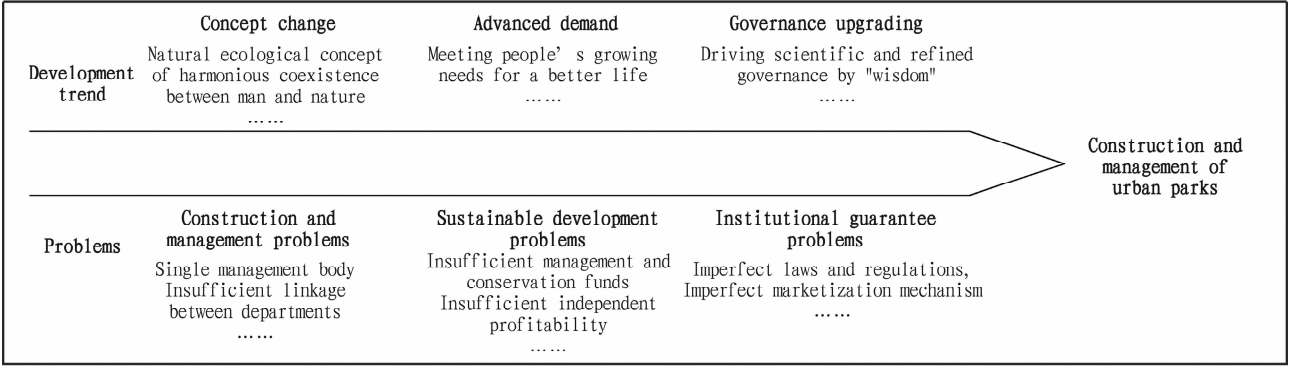


Fig. 1 Trends and problems of construction and management of urban parks

1.1 Construction and management problems Due to the nature of public products, most urban parks are managed only by government agencies for a long time, and the situation of "paying more attention to construction than management" is still widespread. For instance, urban parks in Chengdu are managed by a full-time organization, and a few important parks have a special management unit, namely "who builds who manages" (Fig. 2). Among them, all kinds

of urban parks in Tianfu New Area are under construction, and are managed by the management committee of the district, with dispersed responsibilities across multiple departments (Fig. 2). A unified urban park management structure has not yet been formed, and the departments of sports, tourism and education are not fully mobilized^[2]. There is a lack of a guiding mechanism to encourage social organizations to participate in park management.

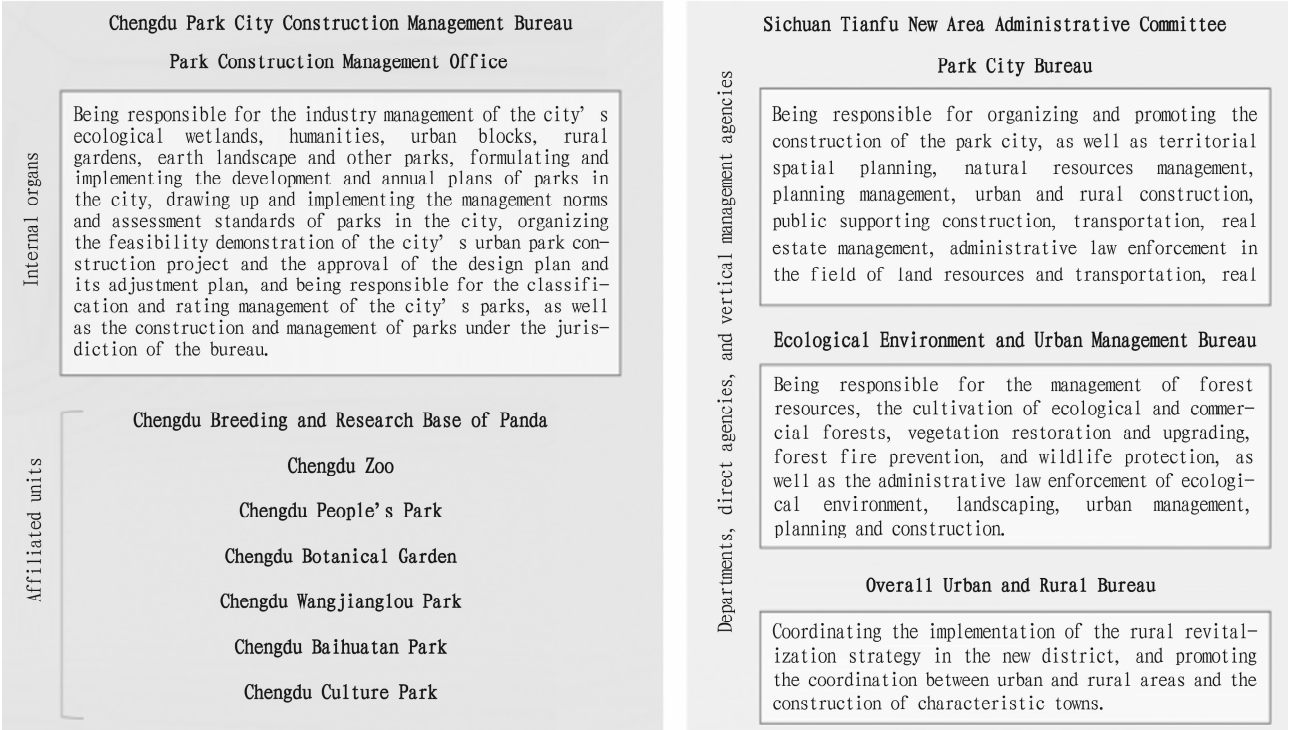


Fig. 2 Schematic diagram of management organizations of urban parks in Chengdu City

1.2 Sustainable development problems Firstly, the management and conservation funds are insufficient, and the current daily maintenance and management costs of urban parks are basically from the government budget. According to the department budget of Chengdu Park City Construction Service Center in 2023, the construction and management expenditures of urban parks include

park overhaul and renovation projects, urban green management and daily maintenance projects, park inspection and evaluation projects, and various special fund projects. In terms of revenue, the annual revenue budget in 2023 was 210.484 8 million yuan, of which the general public budget appropriation revenue, the revenue from budgetary appropriations for government-managed funds,

and business income account for 15.04%, 32.31%, and 52.66%. Nearly half of construction and management income of urban parks depended on government funds. With the gradual increase in the scale of urban parks and the expenditure on planning activities such as public welfare activities, publicity and education, and street communities, the management and operation costs of urban parks continue to increase, and even the phenomenon of fund shortage appears.

Secondly, independent profitability is insufficient. At present, the maintenance and management of parks in Chengdu is basically operated and managed by departments and enterprises. Park management is efficient, but independent income is unstable. In recent years, with the free opening of parks, the operating income such as tickets has decreased year by year, and due to the consideration of ecological protection, the restrictions on social activities such as renting space and contracting engineering projects have been increased in the management policy.

In terms of park operation, social capital is less involved, and only some new parks explore the introduction of social capital to participate in park construction and operation, and the effectiveness of diversified business planning and publicity is slightly weak.

1.3 Park management system problems In terms of institutional guarantee, the legal and regulatory system needs to be improved. For example, the operation and management of urban

parks in Chengdu are based on laws, and independent management methods for important urban parks are explored (Fig. 3). The Regulations on Parks in Chengdu City issued in 2006, and *Regulations on Landscaping in Chengdu City* issued in 2012 are the basis for the law enforcement of the operation and management of parks in Chengdu City. In 2021, two important measures of park management were issued, including the *Interim Measures for the Management of Tianfu Cultural Park in Chengdu* and *Interim Measures for the Management of Jinjiang Park in Chengdu*. In 2022, two related standards for park management were issued, namely the *Guidelines on the Management of Park (Greenway) Sunshine Tent Area in Chengdu (Trial)* and *Guidelines on the Park (Greenway) Scene Construction and Business Integration of Park City (Draft for Comment)*. However, in the actual operation process, the legal responsibility of the relevant functional departments of the government to cooperate with the social governance of parks is unclear, and the main body of park management, law enforcement and responsibility lack legal definition. Secondly, the market mechanism is not perfect. The boundaries of the management, supervision and management rights of urban parks are blurred, and the management personnel lack legal basis when exercising management functions, and the law enforcement responsibility and power are not granted to the management personnel by laws and regulations^[2].

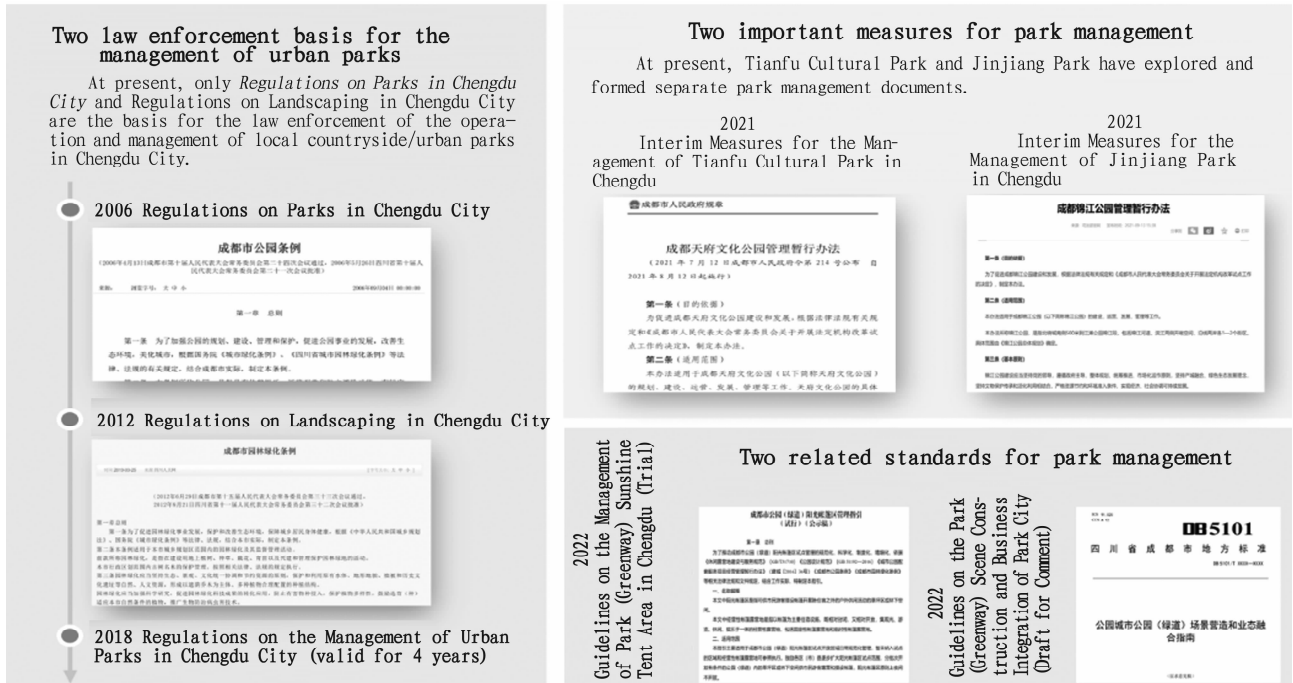


Fig.3 Schematic diagram of laws and regulations of urban parks in Chengdu City

2 International experience in the management and operation of urban parks

2.1 Improving the organization and management structure and enhancing the efficiency of construction management

Some agencies are set up directly under Shenzhen Urban Manage-

ment and Comprehensive Law Enforcement Bureau, including Shenzhen Park Management Center, Shenzhen Greening Management Office, Shenzhen Xianhu Botanical Garden, Shenzhen Xiaping Environmental Park. Shenzhen Park Management Center is responsible for participating in the preparation of the city's park construction and development planning, management and maintenance

standards, and the management and maintenance of all city-owned parks (including municipal parks, country parks, and forest parks). Shenzhen Greening Management Office is responsible for the management of public green space and production green space in the city. Besides, Shenzhen Xianhu Botanical Garden and Shenzhen Xiaping Environmental Park are responsible for the full-time management of Xianhu Botanical Garden and Xiaping Environmental Park^[5].

In 1990, Singapore established the National Park Management Bureau, which is responsible for the construction, management and operation of most parks in Singapore. It has six departments: Corporate Development and Services Department, Profes-

sional Development and Services Department, Park Management and Life Department, National Parks & Gardens and Nature Reserves Department, Animal and Veterinary Services Department, and Jurong Lake Garden Department, which are responsible for the management and operation of the National Park Management Bureau, the formulation of various regulations, standards and plans related to parks, the management and operation of urban parks, the management and operation of suburban & natural parks, biodiversity conservation, and the management and operation of Jurong Lake Garden^[6], so as to realize the management and operation of the entire process and life cycle of urban parks (Table 1).

Table 1 Organizational structure of the National Park Management Bureau of Singapore

National Park Management Bureau	Corporate Development and Services Department	※ Communication and community participation ※ Enterprise services ※ Corporate strategy and planning ※ Finance and purchasing ※ Community projects ※ Operational processes and risk management
	Professional Development and Services Department	※ Industrial development ※ International biodiversity conservation ※ National Biodiversity Center ※ Policy & plan development ※ Street view ※ Mobile technology and development
	Park Management and Life Department	※ Planning and design ※ Special research ※ Central park ※ East park ※ Western park ※ Park development ※ Life and career
	National Parks & Gardens and Nature Reserves Department	※ Ecological protection ※ Fort Canning Park and Istanbul ※ Gardening and community gardening ※ Singapore Botanic Garden ※ Wildlife management
	Animal and Veterinary Services Department	※ Professional and scientific services ※ Community animal management ※ Industry standards and regulations ※ Veterinary health
	Jurong Lake Garden Department	※ Cooperation & development

Japan's *Urban Park Law* specifies that urban parks established by local governments shall be managed by local governments, and urban parks established by the state shall be managed by the Ministry of Land and Transport. At the same time, according to the *Urban Park Law*, the government should specify the managers of urban parks, and organize park councils together with the manager as the supervision agency of the park management. For the facilities inside a park, park managers can assign the construction, management and operation rights to external organizations according to the needs, and the period is less than 30 years. Park managers organize park councils to have the necessary dis-

cussions to improve the accessibility of users of urban parks. A park council is composed of the park manager, relevant administrative agencies, relevant local governments, academic experts, tourism-related organizations, industrial and commercial organizations. It can be set up by each city park individually, several urban parks together, or all urban parks managed by the local government.

Domestic and foreign cities mainly achieve efficient operation of parks through "improving institutional configuration, centralized and efficient power, and clear division of labor." For urban parks, a more flexible system for park operation and management

can be established, and some rights of park management can be allocated to private enterprises according to local needs.

2.2 Improving the funding guarantee and diversified participation mechanism to enhance operational efficiency

2.2.1 Improving the fund guarantee mechanism to enhance the development efficiency. The United States innovates the Business Improvement District (BID) model for urban parks and other public spaces to reduce the financial pressure on local governments to manage parks, and broadens the funding sources for park operation and management. The management and operation cost under the BID model mainly consists of land tax and social service income of urban parks. For example, for Blaine Park in New York, in terms of capital, as long as the owners, residents or tenants own the real estate subject to city tax, the additional land tax required to pay is strictly stipulated to be no more than 3% of the total amount paid annually, and fluctuates year by year according to the annual budget of the park^[7].

Due to the rapid deterioration of Japan's fiscal situation after 1990, it is difficult to effectively develop social infrastructure. Therefore, in terms of park operation and management, Japan innovates the park management system, relaxes restrictions on the construction and management of park facilities (Table 2), and encourages private enterprises to participate in the operation of park facilities and the daily maintenance and management of parks. In terms of the balance of park managers' income and expenditure, local governments stipulate that repairs below a certain amount of

money shall be carried out by designated managers, while repairs above a certain amount of money shall be borne by local governments, and most local governments set the amount between 100 000 and 1 million yen. The income of designated managers mainly includes designated management expenses, usage fee income, behavior license income, *etc.* Expenditures are park management and operation expenses. Part of the excess income is returned to local governments according to local needs, invested in upgrading park facilities, or directly used as park managers' income (Table 3).

In terms of construction and operation capital of park facilities, Park-PFI park public-private fundraising system should be innovated, and enterprises return part of the income through the restoration, development, and operation of parks and surrounding areas to improve the quality and vitality of parks. Meanwhile, certain restrictions on the construction of commercial facilities in parks should be relaxed. Firstly, the coverage rate of buildings is relaxed from 2% (strictly guaranteeing open space) to the maximum 12%, and these new buildings can be used for the construction of commercial, sports, leisure, amusement and other profitable facilities. Secondly, restrictions on facilities are relaxed, that is, enterprises are allowed to set up bicycle parking lots, billboards and other facilities on demand. Thirdly, the process becomes more strict. The local government puts forward a general policy for the renovation of a park, and an enterprise makes a detailed proposal according to it, while the government selects the successful bidder to conclude cooperation^[6-9].

Table 2 Laws and regulations related to the floor area ratio of park facilities in Japan

Applicable law	Classification of facilities	Floor area ratio (coverage rate of buildings)
<i>Urban Park Law</i> (Item 1, Article 4)	Buildings of park facilities	2%
<i>Urban Park Law Enforcement Order</i> (Article 6)	Exceptions for park facilities	
	Rest facilities, sports facilities, educational facilities, storage warehouses, <i>etc.</i>	No more than 10%
	National treasure, important cultural property, important tangible folk cultural property, special historical sites, scenic spots, and natural monuments	No more than 20%
	A covered square, a rainy playground without walls, <i>etc.</i>	No more than 10%
	Temporary park facilities	No more than 2%

Table 3 Income types of park managers in Japan

Type of income	Content
Designated administrative expenses	Expenses of management and operation of urban parks
Royalty income	Use fee of park facilities (corresponding to the regulations): entrance fee, parking fee, <i>etc.</i>
Conduct license income	License royalties related to the sale of goods, <i>etc.</i>
Catering sales revenue	Income from food sales sold by designated managers
Income from autonomous operation	Income of designated managers from fee-based independent undertakings (activities, <i>etc.</i>)

Domestic and foreign cities mainly improve the public-private fundraising mechanism for park operation and management to reduce the government's financial pressure on park operation and management. It is necessary to innovate the park management system, relax restrictions on the construction and management of park facilities, and encourage private enterprises to participate in the operation of park facilities and the daily maintenance and management of parks.

2.2.2 Innovating multiple participation mechanisms to improve operational efficiency. Local governments in Japan implement the designated urban park manager system, and the designated managers of an urban park is responsible for the maintenance and operation of the entire park. The law stipulates that the designated park managers have a management period of 30 years, which can be extended. Park managers submit annual reports on park operation management to the government, and they are evaluated by ex-

perts. At the same time, in terms of the construction and operation of park facilities, local governments and park managers allow private enterprises to contract the construction and later operation and management of park facilities in accordance with relevant regulations. The contract period can be up to 20 years, and park managers will regularly evaluate the operation of private enterprises^[8].

The BID model is widely used in the United States, and attention is paid to public participation in park management. Firstly, the whole people participate in the project, and the applicant of the BID project must obtain the support of all owners in the proposed improvement district and the local government. Secondly, they should undertake the daily maintenance and management of parks to be as an additional supplement to the regular municipal supporting services, such as maintenance, landscape maintenance, facility upgrading and security, etc., and undertake the responsibility of promoting the sustainable economic development of the improvement district, such as marketing, business promotion and community services. Thirdly, a board of directors should be established, and the majority of which must be composed of property owners, merchants and representatives of residents in the improvement district^[9]. The board appoints a manager to oversee the day-to-day operation of BID, leaving much of the tedious day-to-day work to staff employed by the BID governing body.

Domestic and foreign cities encourage non-governmental organizations to participate in park operation and management mainly through the establishment of public participation cooperation models. In terms of urban parks, it emphasizes the management of non-governmental organizations and the supervision of government organizations, contracting the management and operation authority of parks to private organizations and organizing public and expert

supervision.

2.3 Improving the system of laws and regulations to strengthen institutional guarantees As early as 1975, Singapore promulgated and came into force the *Parks and Trees Act*, the *Protection Act of Parks and Trees* and its supporting acts, and later formed the *National Park Act* and *National Park Commission Act*, etc. It has established a sound system of laws and regulations on park planning and management, and realized that all aspects of urban parks have laws and evidence to follow.

Japan has established a "1 – 2" legal and regulatory system for the planning and management of urban parks. In order to regulate the establishment and management of urban parks and promote the healthy development of urban parks, it has formulated the *Urban Park Law*, makes provisions on the definition and management of urban parks, and makes amendments according to the changes in the development needs of urban parks. At the same time, the *Law Enforcement Order of Urban Parks* (Decree No. 290, 1956), and *Law Enforcement Regulations on Urban Parks* (Provincial Construction Order No. 30, 1956) and other relevant supporting regulations has been formed (Table 4). In terms of the local autonomy act, taking the *Tokyo Metropolitan Park Ordinance* as an example, there is "qualification", "application for permission", "deposit", "land or park facility fees", and "installation or management of park facilities" regarding the setting up and management of park facilities. Provisions for suspension and repeal are provided. The *Urban Park Law* and *Law Enforcement Order of Urban Parks* clearly define the content and scale of park facilities.

The *PFI Law* specifies the construction and management of urban parks by private enterprises implemented by PFI. According to the contract between park managers and private enterprises, private enterprises shall construct, maintain and manage park facilities^[5-9] (Fig.4).

Table 4 Development course of laws and regulations on the planning and management of urban parks in Japan

Time	Law	Content
April 20, 1956 (Law No. 79)	Promulgating the <i>Urban Park Law</i>	Stipulating the construction, layout and management standards for urban parks.
May 25, 1976 (Law No. 28)	Revising the <i>Urban Park Law</i>	Establishing a national park system and a dual-use structure system.
June 18, 2004 (Law No. 109)	Revising the <i>Urban Park Law</i>	Creating a three-dimensional urban park system, and clarifying the protection regulations of leased land parks.
June 15, 2017	Revising the <i>Operation Guide of Urban Park Law</i>	Setting standards of urban parks, the setting standards of park facilities, the installation of park facilities by people other than park management personnel, urban park protection, three-dimensional urban parks, the council, and supervision.
September 7, 2020	Revising the <i>Enforcement Order of Urban Parks</i> according to No. 268 Cabinet Order of 2020	Proposing establishment standards of urban parks, standards of equipment and facilities, and management standards, and making clear the fees related to urban parks.
January 1, 2021	Revising the <i>Enforcement Regulations on Urban Parks</i> according to the Ministry of Land, Infrastructure and Transport Decree No. 98 of 2020	Clarifying the requirements and facilities for the establishment of municipal public facilities and public parks.

Cities at home and abroad have established a comprehensive system of laws and regulations to regulate the development of the whole process of park planning, management, operation and maintenance, among which Japan has issued the *PFI Law* specifically for the flexible management and operation of urban parks.

3 Practical inspiration for the management and operation of urban parks in Chengdu City

In view of the problems in the current management and operation of urban parks in Chengdu, such as single construction man-

agement subject, the shortage of follow-up management and operation costs, and the imperfection of relevant laws and policies. According to the advanced practical experience of urban park man-

agement at home and abroad, some enlightenment and suggestions on the management and operation of urban parks are put forward as follows.

Legal system and characteristics of urban parks

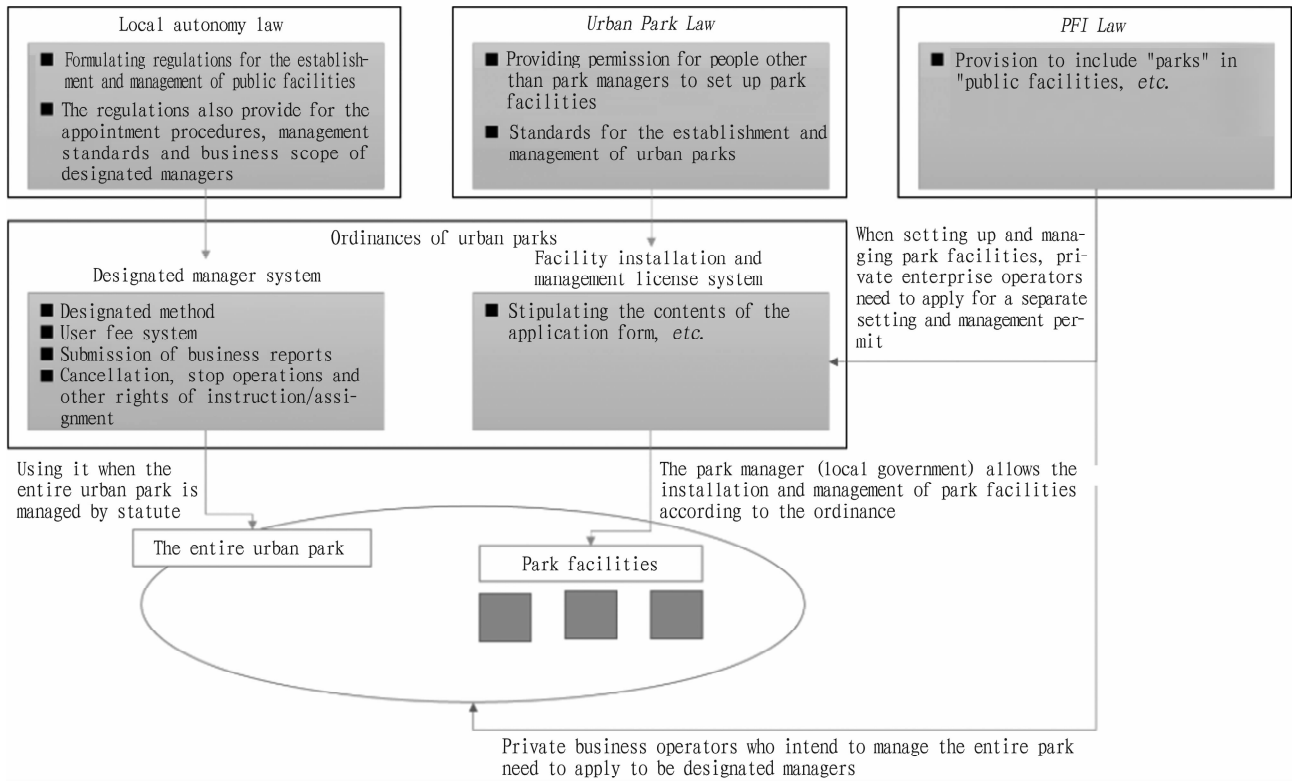


Fig. 4 Schematic diagram of laws and regulations for the planning and management of urban parks in Japan

3.1 Improving the organization and management structure, and setting up a professional management team A full-time management organization should be established to make the power and responsibility more matched and realize the transformation of the ecological value of urban parks. A park management organization should be set up to be responsible for the formulation of standards for park planning and construction and the operation and management of parks. For important urban parks, a full-time operation and management organization should be set up. Professional talents are selected from various functional departments to set up a park construction and management team. Expert teams are employed to support it, and scientific park management should be paid attention to. Industry experts are invited to participate in the formulation of important decisions on the construction and management of urban parks. It is necessary to attach importance to the accumulation and transportation of talents, hire professional teams to train and guide park management talents, and encourage qualified comprehensive universities to open park management majors to cultivate complex comprehensive management talents.

3.2 Improving the fund guarantee mechanism and exploring public-private fundraising and industrial introduction The public-private fundraising operation mechanism of urban park facilities should be explored, and local governments and park managers jointly recruit private enterprises to participate in the construction

and operation of restaurants, cafes, sports venues, exhibition halls and other facilities in parks. The responsibilities of all parties are clarified, and the interests of all parties are balanced by signing contracts and other legal means. In service contracts, clear provisions on the rate of return and usage fee are made, and clear requirements on management and maintenance are put forward. In addition, the implementation process should be strictly supervised, and the performance of contracts should be strictly guaranteed. In terms of capital costs, local governments pay park management commission fees to park managers. Park managers shall be responsible for the daily maintenance and facility construction of parks. Private enterprises and institutions shall pay the park management fees for the operation of park facilities and the fees for the use of park sites for various activities. Park users independently pay park parking and service fees to park managers and park facility operators, and the excess income is used for the quality improvement of parks.

3.3 Innovating diversified participation mechanisms, encouraging public-private cooperation, and promoting the integration of culture, tourism and businesses The paths for private enterprises to participate in park management should be explored to promote the integrated development of culture, business and tourism in parks. Under the normal operation of parks, it is needed to purchase commercial projects that do not damage the

ecology and are suitable for the sustainable development of urban parks through public bidding, establish fair comprehensive assessment criteria for project profits, implement the indicator elimination system, and improve the professional and efficient level of park management save government management costs and improve management efficiency. To promote the integration of culture, business and tourism, it is necessary to plan diversified sports events, cultural and recreational activities, commercial consumption, *etc.*, without affecting the ecological environment of parks, and encourage the appropriate integration of culture, sports, tourism and business, so as to ensure the orderly management of parks and efficiently transform the ecological value.

3.4 Improving the system of laws and regulations and relevant laws, norms and standards The local system of laws and regulations should be improved, and the laws and regulations of urban parks should also be improved based on the experience of advanced cities, so as to formulate a system of laws and regulations for park management that is systematic, detailed, strict, fair and just. The standards of park management should be drawn up, and for important parks, and the boundaries of responsibilities and rights of park management administrative subjects, law enforcement subjects and responsibility subjects, as well as provisions on the specific content of park management, facility management, operation mode, management personnel training and other aspects should be clear. A scientific legal basis should be created to protect the park ecological background and sustainable development. According to the relevant requirements for the construction of demonstration areas of park city, standards for park operation and management that meet the development needs of Chengdu should be formulated to provide technical support for the realization of the ec-

ological value of parks. Meanwhile, the basis for law enforcement should be strengthened, and patrol commissioners, law enforcement teams, inspection teams and other departments should be configured under the special park administration bureau to restrain illegal and unethical phenomena during park management.

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threat degree. Simulation results show that the algorithm can reasonably evaluate the complex and varied meteorological threats to the coordinated search and rescue of manned or unmanned aircraft, and improve the safe flight rate of manned/unmanned aircraft in the process of coordinated search and rescue.

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