

# Study on the Practical Exploration and Realistic Dilemma of Sponge City Construction from the Perspective of Public Management Based on the Analysis of Research Data from Hubei Province

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**Abstract.** In rainy season, urban flood frequently occurs in many cities of China. The sponge city construction is still filled with many problems that need resolving. In order to steadily push the sponge city construction forward. The research team carried out an research on the sponge city construction in Hubei Province, collected the relevant data and had an analysis of the research data of sponge city construction in the province. This paper summarizes the practical exploration and realistic dilemma of sponge city construction in Hubei Province, and the paper has a conclusion of the suggestions for the construction of sponge city in Hubei Province. Hope this research can provide reference for later sponge city construction.

## 1. Introduction

As an important part of the construction of ecological civilization in our country, sponge city construction is an important project of people's livelihood, which is a huge challenge in the process of public administration. "In many cities not only fails to make full use of rainwater resources, but also caused a very serious flood disaster [1]. As a result of the city's expansion, the proportion of impervious areas on the earth's surface continues to increase. Runoff coefficient is also growing"[2].The Province is known as the "province of thousands of Lake", the water is the core competitiveness of the future development. Promoting the construction of sponge city, solving the city problems including rain flood, dry disaster, "heat island effect" and other issues as soon as possible is the province strategic initiatives to seize the green development opportunities. "Sponge city is the specific expression of ecological civilization in urban rain water management and the Chinese wisdom that is in line with international advanced rainwater management concept" [1]. Therefore, it is of great significance to study the present situation of sponge city construction in the province.

## 2. Practical Exploration of Sponge City

### 2.1. Adhere to the Planning Lead

The sponge city construction of the province adheres to the basic principle of planning to lead, first the planning, after the construction, which reflects the controlling and leading effect of planning. In September 2016, the Office of the provincial Government issued "The notice of accelerating the province's underground integrated corridors and sponge city construction". The notice stressed: make scientific planning and effectively enhance the Science, system and implementation of the planning. In



May2017, "the General Office of Hubei Provincial Government implementation views on the promotion of sponge city construction " issued.

### *2.2. Pay Attention to Ecological Priority*

"The sponge city construction pays attention to the basic principle of ecological priority" [2]. In the urban planning, the province makes the scientific delineation of the blue line and green line; in urban development and construction, changes the traditional ideas that only focus on the construction of drainage facilities, takes the systematic management model, makes the Urban topography, vegetation soil, wetland and water have an effect to the rainwater accumulation, penetration and purification, focuses on the protection to rivers, lakes, wetlands, ponds, ditches and other water-sensitive areas, strengthens the source control, gives priority to the use of natural drainage systems and low impact development facilities, makes the initial realization of the natural accumulation of rain, natural infiltration, natural purification and sustainable water cycle, and gradually improves the natural restoration of water ecosystem capacity, basically sustains the ecological function of the city.

### *2.3. Emphasize the Safety Importance*

The sponge city construction of the province emphasizes the basic principles of safety, regards the protection to people lives and property safety and social economy security as the starting point of all, takes the comprehensive use of engineering and non-engineering measures to improve the quality of low-impact development facilities and management level, eliminates security risks, enhance the capacity of disaster prevention and mitigation so the province is able to protect urban water security. In the construction procession of sponge city in the province, great importance is attached to drainage and flood work. According to the urban drainage and flood planning, make the construction plans. At the same time, on the basis of the previous drainage and flood prevention work, the province carries out inspection work including the drainage network clearance, drainage facilities conservation, flood point remediation and emergency response mechanism before the flood disaster, especially is strict with the implementation of flood Disaster reporting system.

### *2.4. Focus on the Local Conditions*

According to the local natural and geographical conditions, water characteristics, water resource status, rainfall law, water environment protection and flood control requirements, the Sponge city construction of the province adheres to the basic principles of local conditions, reasonably determines the objectives and indicators of development control by the way of low impact , scientifically plans and selects the sunken green space, planting grass ditch, rain wetlands, permeable pavement, multifunctional storage and other low-impact development facilities and its combined system.

### *2.5. Promote the Overall Construction*

The sponge city of the province promotes the overall construction, the local government carries out the overall planning and construction in consideration of both Urban and rural areas. In all types of construction projects, the development control objectives, indicators and technical requirements of low impact are Strictly implemented, having a whole construction. In January 2017, work conference system of underground integrated corridor, sponge city construction and urban black smelly water remediation was formally established in the province, marking the construction of sponge city in the province towards the overall construction track. In practice, the Province has also gradually accelerated the pace of co-ordination in the construction of sponge city, not only the co-ordination of new and old urban sponge city construction, but also the sponge-type community and public building sponge construction.

## **3. Realistic Dilemma of Sponge City**

### *3.1. The Construction Concept is Relatively Backward*

"Unlike the conventional, engineering, inelastic gray infrastructure, the ecological infrastructure is a living system"[3].At present," high-speed construction on the ground, low-speed construction

underground" the phenomenon of urban construction is very common, the traditional thinking has not yet effectively changed. Sponge city construction management is a cross-system engineering involving many disciplines and fields, therefore, the relevant departments, industries, majors also have to change the construction concept, namely from a simple urban drainage to the economic, environmental, social awareness transition.

### *3.2. System Design Still Needs Optimization*

Firstly, the top-level system design is not perfect. Sponge city construction involves planning, design, construction, operation, maintenance and other aspects, the success of the implementation depends on the top of the system design. However, some pilot cities did not develop a perfect top-level design. Secondly the relevant laws and regulations is not perfect. Sponge city construction is still in the new stage, the need for strong regulatory policy package is urgent, for example: planning laws and regulations, investment, financing and price policies of major construction projects, land development policies, economic levers policy and so on.

### *3.3. Management Mechanism Needs to Be Improved*

At first, the experience of construction management is lacking. There is no mature domestic sponge city construction management system. Therefore, the construction of sponge city needs to accumulate management experience in exploration. Sponge city management needs the cooperation of lots of departments including planning, construction, municipal administration, housing management, garden, water, urban management, land, environmental protection. There is still a problem of convergence and integration between the existing administrative departments, and it is necessary to get rid of the shackles of the management mechanism. Secondly, Sponge city construction and management is dialectical unity. Due to the information lack of transfer process, the construction of the main body and the management of the main body is not uniform, the lack of effective information management platform and other reasons, the construction of sponge in the province pay more attention to the construction than management.

### *3.4. Lack of Technical Support*

"Sponge philosophy embodies in the following three strategies: Consumption, deceleration and adaptation "[4].On one hand, the technical support system needs to be strengthened. In the construction of sponge city, we must establish a set of all-round and full-cycle technical system involving planning, construction, acceptance, operation, etc .However, due to the tight time, lack of technical reserves, the technical system of the province has not yet formed. On the other hand, there is a lack of technical strength. Sponge city construction requires a number of innovative talents with strong talents. However, in this area, professional and technical personnel reserves are relatively weak.

### *3.5. Return on Investment and Financing is Difficult to Guarantee*

Sponge city construction has the typical characteristic, such as so many projects, scattered investment, long cycle, and sponge city construction projects are mostly public projects so there is no long-term sustainable income, return rate is difficult to guarantee, resulting in most investment units discouraged. "Sponge city will bring about a wide range of social welfare, but it requires huge investment" [5]. At present, most of the first batch of pilot civic construction funds still come from the state financial subsidies and local governmental direct investment, social capital injection is significantly insufficient.

## **4. Suggestions On the Implementation of Sponge City**

### *4.1. Cultivate Advanced Construction Concept*

"The essence of Sponge city is changing the concept of traditional urban construction, achieving the coordinated development of resources and the environment"[6].Ideas are the forerunner of action. All levels of governmental departments have to fully understand the importance and urgency of building a sponge city, and further enhance the sense of responsibility and mission, firmly establish the concept of new development and scientific achievements, actively create a social atmosphere of sponge city.

To this end, the construction of sponge city must Cultivate advanced construction concept, namely from the "rapid emission, the end governance" into "the source emission reduction, process control, system management, co-ordination", from "engineering water" into "ecological water control". Realize the organic combination among Gray and green ,ground and underground ,source and end, storage and row, return to urban natural circulation.

#### *4.2. Improve the Laws and Regulations*

The construction management of sponge city needs to be combined with the policy and law support, actively carries out research on water ecological laws and policies, conscientiously sums up the practical experience, builds a more complete sponge city law and policy system. The government should issue guidance, formulate policies and regulations, establish a sponge city planning and implementation legal system based on the whole life cycle. The legislative department should clean up all kinds of wading laws and regulations, establish a unified wading legal system, provide legal Guarantee for sponge city construction. At the same time, the government should also develop supporting policies and improve the policy standard system.

#### *4.3. Optimize the Overall Management Mechanism*

The city people's governments should set up special leading organizations and working groups, implement the working responsibilities, optimize the working mechanism, have a clear sponge city planning and construction of the leading sector and the relevant departments and units, comprehensively carry out management work. On the basis of a clear division of responsibilities, the relevant departments should form a coordinated linkage mechanism, according to work objectives from the leadership team , promote the phased work, further optimize the approval process of the sponge city construction , strengthen the department linkage, explore online approval, and effectively improve the efficiency of approval.

#### *4.4. Consolidate Technology Support*

Relying on the Wuhan University sponge city construction research center, establish sponge city technology demonstration base. Improve the sponge city planning and technical system of implementation. Establish the intelligent sponge information management platform, construct the intelligent sponge city. To build a planning and construction management integrated information platform of sponge city, The government should pay attention to the Internet + technology in rain flood monitoring applications. And, The government should use large data analysis and cloud computing technology to achieve intelligent control of urban water systems and fine management, so that the city have fast, intelligent, flexible response to the water problem. More importantly, strengthen technical personnel protection, build expert service platform. Sponge city construction involves a wide range. The government should reserve technical personnel from investment, design, construction to operation, management and other aspects.

#### *4.5. Innovative Investment and Financing Mechanism*

Governmental economic support for the future large-scale sponge city construction is more like an investment-oriented, which can only play a leverage. To really ease the funding bottleneck, innovation of investment and financing is the only way. Therefore, the construction of sponge cit should adhere to the principle of governmental guidance and social participation. Play the decisive role of market allocation of resources and the guiding role of governmental regulation, increase political support, create a favorable environment for development. And actively promote the governmental and social cooperation in capital (PPP), franchise and other models to attract social capital to participate extensively in sponge city construction.

#### *4.6. Carry Out Publicity and Training*

Sponge city concept is deeply rooted is the social foundation of sponge city construction. The sponge city construction has formed a number of demonstration projects which can be promoted and replicated in the construction of future. When the experience matures, the government should have a

timely publicity and effective promotion, which requires governmental leading, social participation, comprehensive publicity and training, so that the concept of sponge city can become the consensus of the whole society.

## 5. Conclusions

As a major measure of governmental public management, sponge city construction is still in the exploratory stage. There are some difficulties in concept, system, management, technology, investment and financing. The sponge city construction process in the future, the society, government and academic and research institutions must continue to explore and summarize the practical experience so as to ensure the implementation of sponge city construction can orderly advance.

## 6. References

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