

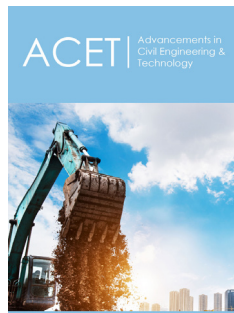
# The Relations Between Urban Development and Sustainable Municipal Facilities Construction

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## Abstract

Sustainable municipal facilities are a crucial component of effective national, regional and city-level governance, with direct implications for population, economy, resources and ecology. This paper examines the historical evolution of urban development and municipal infrastructure across ancient and modern times, drawing on examples from both Chinese and foreign contexts. Through the lenses of urban resident perspectives, urban development dynamics and social development contradictions, this paper employs Maslow's theory of hierarchy of needs and the dynamic balance theory to elucidate the mutually reinforcing relationship between urbanization and the construction of municipal facilities. Ultimately, this paper argues that the development of sustainable municipal facilities is essential for ensuring the continued upward spiral of urbanization and municipal infrastructure construction.

**Keywords:** Urban development; Municipal facilities; Sustainable planning; Urbanization impacts

## Introduction

Municipal engineering is an important part of urban infrastructure construction, mainly refers to the construction of infrastructure that meets the needs of urban development within the planning scope of urban areas, including the construction of public facilities such as environmental sanitation, garden construction, flood and drainage prevention [1], water supply and power supply, garbage disposal, etc. [2]. Its purpose is to provide people with a safer, more comfortable, and more friendly living environment [3,4]. This study discusses the relationship between urban development and sustainable municipal facilities by drawing on historical and contemporary urban construction practices in China and other regions and analyzing relevant municipal facility developments.

## Critical Analysis

### Development of cities and municipal facilities from the perspective of demand

The connection between cities and municipal facilities extends beyond the facilities themselves, as urban development encompasses all aspects of people's lives, from basic physiological needs to safety and security, socialization, mutual respect and self-actualization, as outlined in the theory of Maslow's Hierarchy of Needs. Combined with this theory, human needs are constantly evolving, from satisfying basic physiological needs to providing safety and security, on top of which socialization, mutual respect, and self-actualization can take place [5]. The construction of urban infrastructure is also hierarchical, the former Soviet Union divided urban infrastructure into three categories, production infrastructure used to serve production and ensure normal production; social life infrastructure to meet the needs of all residents outside the production process; and a series of social infrastructure to ensure the management process of municipal utilities, priority to meet the production infrastructure, followed by social life infrastructure The infrastructure of social services is the last one [6]. Therefore, municipal facilities are foundational to fulfilling a range of human needs, from

flood and disaster prevention, to water and electricity provision, pollution treatment, etc.; or as an enabler for human beings to pursue a better life, such as product development, urban greening, and telecommunication networks, among others.

### Development of cities and municipal facilities from the perspective of productivity

Urban development serves to meet basic human needs while also providing increasingly diverse, intelligent, and advanced municipal facilities. For instance, even in the Babylonian era, cities had basic water supply facilities, such as water diversion canals, despite the absence of uniform city forms and public facilities [6]. With the advent of the first industrial revolution, technology drove changes in productivity, giving rise to the emergence of new industrial cities and a massive population build-up, which also brought about a deterioration of the urban environment, with Britain once becoming the most advanced and most polluted country in the world. Reading some of the literature of the time, words such as heat, stench, smoke, and poison were the most common words used to describe the urban environment [7]. Similarly, during China's reform and opening-up period, the development of infrastructure was slow, with transportation, post and telecommunications seriously lagging behind, which is closely related to the backward productivity; in the mid to late 1980s, China increased investment in infrastructure, mainly for water conservancy, transportation, communications, urban infrastructure, urban and rural power grid transformation projects [6], which not only improved people's lives, but also laid a good foundation for economic and social development.

### Development of cities and municipal facilities from a contradictory perspective

Municipal facilities in cities are not always permanent and is limited by productivity and technology, as well as by the cognitive ability of the government and urban planners. Therefore, as cities develop and build more and more, municipal facilities need to be upgraded iteratively, or even rebuilt, in order to maintain their stable and efficient operation. This is due to the contradiction between the quality of municipal construction projects and the higher quality requirements and more diversified usage demands of citizens. Moreover, this issue is related to various social problems in the process of urban development, such as lengthy construction links, the involvement of many units, and poor coordination [6,8]. The negative effects of such repeated construction are enormous: increased financial expenditure, the government's investment in frequently repeated construction projects is two to three times higher than the cost of a one-time construction; at the same time, due to construction needs, some main traffic roads are frequently dug up, causing congestion of traffic and pedestrian flow; construction brings dust and noise, which not only affects the daily life of residents, but also damages the appearance of the

city. Therefore, although the development is unpredictable, the only way for planners to carry out municipal facilities is to report a long-term perspective in order to better support the smooth and orderly construction and development of the city [9].

### Conclusion

To sum up, this paper discusses the benefits of facility construction from three perspectives: human needs, social productivity, and urban development contradictions. By combining important municipal facility construction events in the process of urban development in several countries and integrating the financial income and expenditure in actual construction projects, it is evident that urban construction and municipal facilities construction are complementary. Municipal facilities are the basic system to maintain the harmonious and orderly development of cities, while the construction and development of cities not only provide stable financial investment for municipal facilities, but also put forward new requirements for their iteration and upgrading. In the modern city construction, which emphasizes more and more on human core and ecological concept, planners should firstly anticipate the future possibility of putting municipal facilities into use, and secondly should accurately evaluate the benefits that can be brought by putting them into construction, and try to design and plan as reasonably as possible, and reduce unnecessary repetitive construction in collaboration with multiple parties, so as to maximize and promote the development of municipal facilities.

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