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A novel solution for urban management paradigm: Sponge city construction practice in China

Rapid urbanization is a global trend. Such as in China, over the past decade built up areas have increased by 17,252 km². This roughly equates to an addition of 165 million people dwelling in urban areas in a decade. Rapid urbanization and traditional development practices increases the amount of impervious surfaces. It has led to a worsening city syndrome situation that exists in many urban areas such as urban flooding, water pollution, heat island effects and ecologic deterioration, etc. In recent years, much attention and efforts have been given to finding solutions to these and other environmental problems. Sponge city construction (SCC) initiated by the national central government of China is a novel solution for urban management paradigm. It presents a system solution to tackling the storm water induced urban flooding disasters during extreme events and reduction of water pollution problems through infiltration, retention or detention, storage, purification, reuse and discharge of rainwater, while increasing the possibility of storm water reuse and improving the urban environment and liveability. In 2015, the China central government selected 16 cities among more than a hundred applicants as the first tier of Sponge City pilot sites. Each city receives between \$63.5 million to \$95.2 million from the central government for three years with the total investment estimated to be about \$14 billion. In 2016, another 14 cities were selected as the pilot cities for the second batch. Now, sponge city construction (integrating green and gray infrastructure) principles have become the new paradigm for a sustainable urban storm water management strategy. It has become a widespread focus in urban water management research and practices globally. It has been five years since it was launched. 30 Chinese cities have been selected as pilot cities with financial support from the central government to test the possibilities and different Low Impact Development (LID) solutions like what is the implementation status so far? In which levels the goals are achieved? What are the main achievements and lessons, as well as recommendations for the future implementation learning from the practices? This paper presents a summary of the SCC practices, bringing together the political objectives, technical approach, successful experience and challenges during the China's SCC.

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