



Case Study



Case 41 China: The Sponge Cities Concept

Problem to resolve: Massive urbanization reduces the infiltration surface for rainwater and leads to a lowering of the water table and water scarcity

Primary Tools: → Tool WM 3

Secondary Tools: active and passive recharge of rainwater and cleaned greywater into the soil.

Background.

The Chinese sponge cities concept¹ embraces new urban planning and design approaches to:

- Incorporate softer “SuDs” type green features in cities to slow and reduce runoff and improve urban environment.
- Soak up and store water to act as an enhanced resource for the city.
- Combine drainage with wastewater reuse and water supply solutions enhance urban capacity and reduce environmental impact.

Link with urban river and lake restoration schemes to enhance catchment water quality and create more beautiful and liveable cities (with enhanced property values).

Sponge City

SPONGE CITIES
CHINA'S PUSH FOR GREEN (NOT GRAY) INFRASTRUCTURE

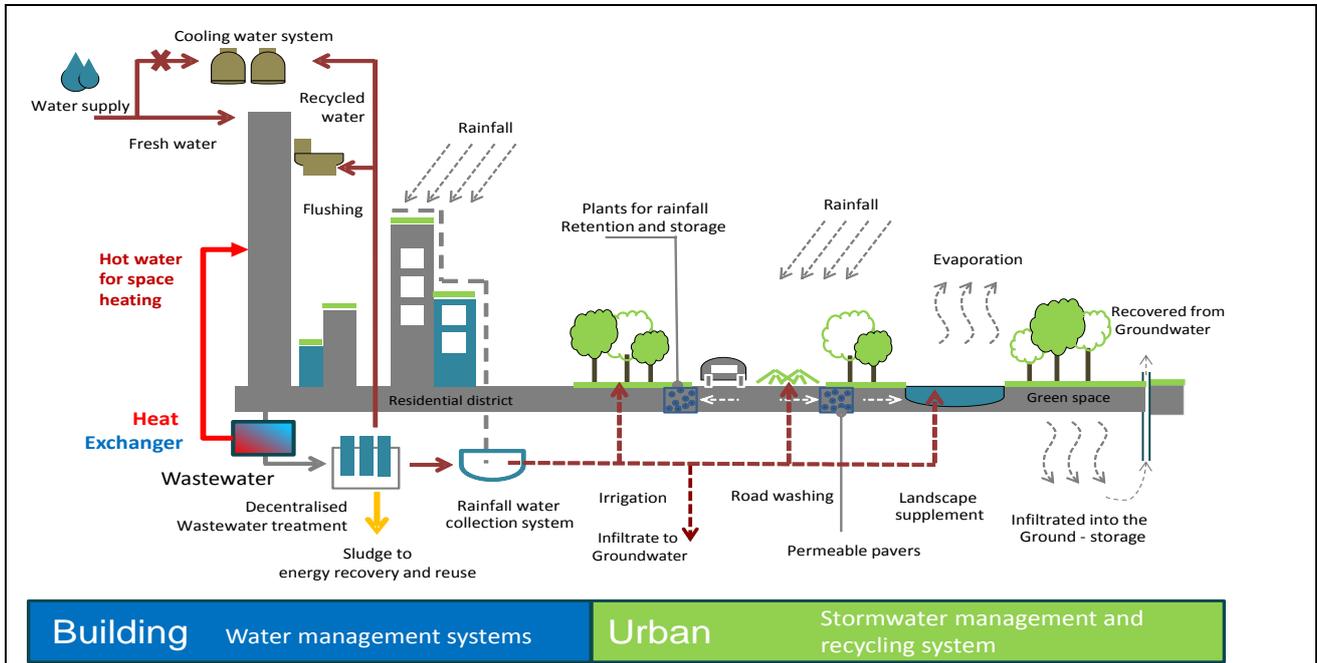
30 Chinese cities will each receive 400-600 million RMB to pilot green roofs, constructed wetlands, increased tree cover, and permeable pavements to capture, slow down and filter storm water.

Source: Lauren Sidner | Design: Carl Hooks

The Sponge City concept has become leading notion in Chinese urbanism²

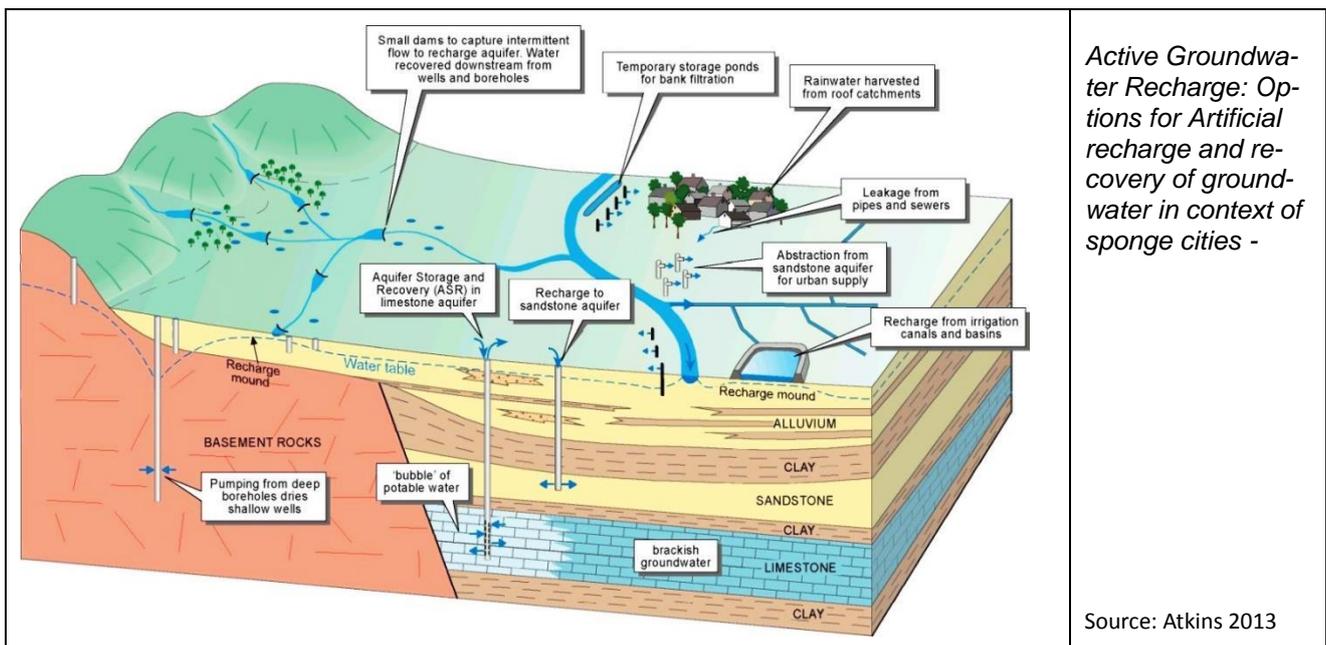


The “Sponge Cities” concept includes not just external sustainable drainage features but also the recycling and reuse of wastewater in the city and the storage of this within the urban infrastructure to provide the “Sponge” element of the concept. This will also include the use of groundwater aquifers as a means of longer term storage and recovery of water resources in urban settings. This can be enhanced with artificial recharge schemes at the urban and regional scales.



Diagrams to show interaction of the municipal water supply system with decentralised wastewater treatment and then how that interacts with the urban landscape and with urban features.³

Many challenges will still lie ahead in developing the detailed standards for “Sponge Cities” features and for the stakeholder engagement and new business models required to bring these successfully into operation and ensure that they are financially viable and well maintained. However, there are projects that incorporate some of the features and others underway that are implementing more “Sponge Cities” features as a part of overall low carbon planning. No fully-completed eco-cities or “Sponge Cities” yet exist that would illustrate achievement of the full ambitions of these principles.



Active Groundwater Recharge: Options for Artificial recharge and recovery of groundwater in context of sponge cities -

Source: Atkins 2013

Credentials:

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Editors: Kosta Mathey and Florian Steinberg.

Sources:

¹ MoHURD. 2014. Technical Guide of Sponge City海绵城市建设技术指南 . Beijing.

See also other work of Atkins: Future Proofing Cities, DFID, UCL development planning unit, Atkins, 2012.
www.atkinsglobal.com/fpc

² https://www.dsd.gov.hk/Documents/SustainabilityReports/1617/en/photo/section3_1_2_large.jpg,
http://waterbucket.ca/rm/files/2017/08/Sponge-Cities_Wilson-Center.jpg

Source: Atkins. 2013. Eco-Low Carbon Urban Planning Methodology. 2013. <http://www.atkinsglobal.com/en-GB/group/sectors-and-services/services/future-proofing-cities/china>