Improving Resilience with Climate-Resilient and Smart Water Infrastructure

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Project Snapshot

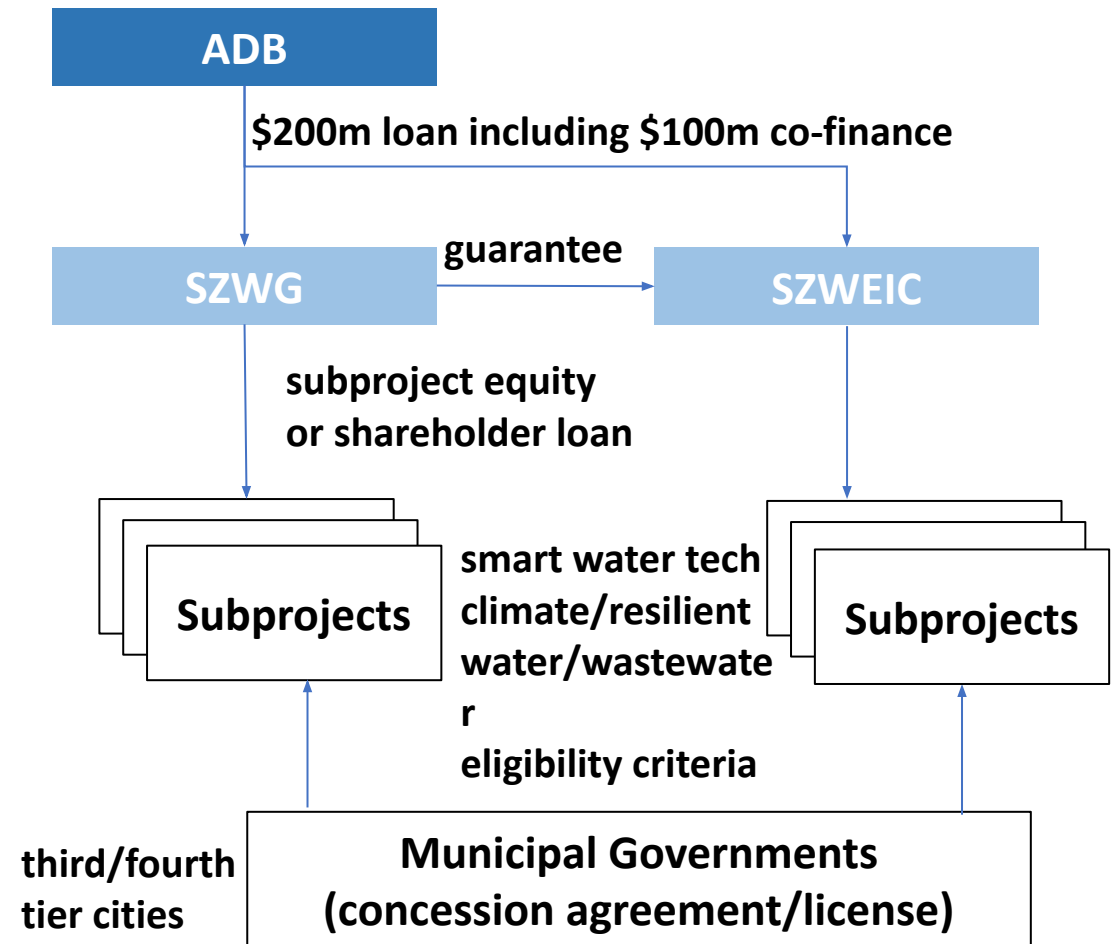**PRC: Climate-Resilient and Smart Urban Water Infrastructure Project**

Sector challenges: the PRC is one of the world's most water-stressed countries; water scarcity is exacerbated by climate change

Purpose: to facilitate climate-resilient and smart urban water management

Borrowers: Shenzhen Water Group (SZWG); Shenzhen Water and Environment Investment Group (SZWEIC)

Financing terms: local currency loan; tenor 10 years; availability period 3 years

Nonfinancial value addition: mainstreaming climate change, resilience and smart water technologies / gender mainstreaming / safeguards / knowledge sharing to replicate the Project

ADB

$200m loan including $100m co-finance

SZWG — guarantee → SZWEIC

subproject equity or shareholder loan

Subprojects

smart water tech
climate/resilient
water/wastewater
eligibility criteria

Subprojects

third/fourth tier cities

Municipal Governments (concession agreement/license)

Smart Water Technology

Smart Water Management is a combination of sensors and instruments, communication network, and data processing, to make a water network respond to real-time data:

Remote sensors to monitor water quantity, quality, and timing for re-chlorination and automatic flushing

Hydraulic modeling with field data to detect network anomalies (pressure and flow), and react quickly to incidents and leakages to improve performance and energy efficiency

Big data to improve water supply and wastewater treatment operations, overall efficiency, and planning for network extension

Total online care service for the end-users including online payment and water consumption analysis and virtual service centres to improve customer services

Forecasting and early warning for urban flooding

ADB

Sponge City Construction

- Sponge city construction involves a series of infrastructure which can mitigate impacts from floods and droughts through artificial and natural based solutions for storing and timely releasing excess rainfall

- In the PRC, 30 pilot sponge cities including Shenzhen are under implementation

- Contractual arrangement with the municipal government varies

Climate-resilient Techniques
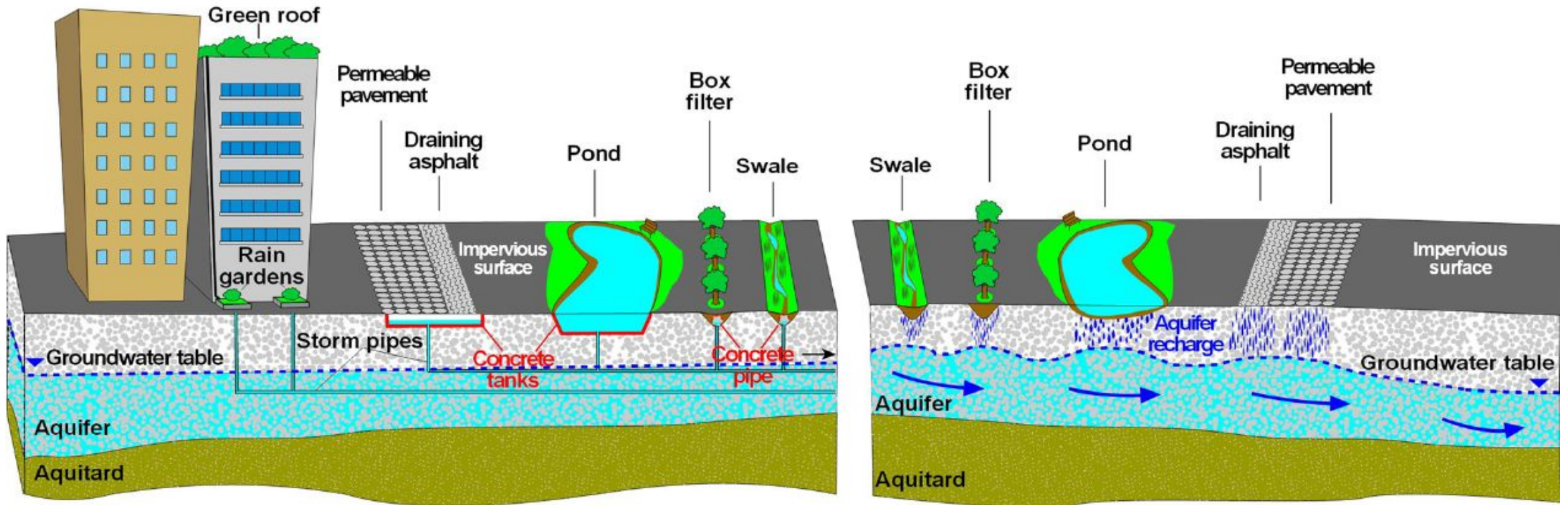
(Left) Separated drainage system for storm water collection from sewerage system for wastewater collection. (Right) Aquifer recharge management. Both techniques will absorb urban runoff and enable urban areas to adapt to climate change.

Key Lessons Learned

- **One ADB Approach** provides a one-stop solution synthesizing ADB's transactional expertise and sector knowledge to mainstream climate change adaptation in water sector through non-sovereign financing

- Well structured sponge city PPP contract against pre-determined performance indicators and integrated model covering water, wastewater and sponge city **improve the bankability of adaptation projects**

- The implementation of **smart water management** accelerates the transition towards more sustainable use of water beyond the COVID-19 pandemic

- SZWG's know-how transfer to the 3rd and 4th tier cities via **peer-to-peer learning** is expected to enhance local governments' climate consciousness in their economic recovery

ADB