

Integrated Urban Water Management under centralised planning system – Sponge City in China

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Outline

- Intent of Paper
- Methods
- Overview of IUWM
- Evaluative criteria of IUWM
- Overview of Sponge City in China
 - Water problems and role of planning in China
- Preliminary review of Sponge City initiative using criteria defined
- Conclusion and future works

Intent of Paper

- Brief overview of Integrated Urban Water Management
- Introduction to Sponge City initiative in China and its “planning leading” approach to urban water management
- Outline of some underlying characteristics of IUWM, and use them to understand the current position of the sponge city initiative

Methods

- Describe three underlying characteristics of IUWM through literature review
- Understand the context of Sponge City through review and analysis of policy and media literature, as well as through informational interviews with key actors in China
- Preliminary evaluation of the Sponge City initiative using the information obtained

Overview of IUWM

Dublin Statement, Agenda 21

- Linking social and economic development with environmental protection and human health
- Participatory approach, involving users, planners and policy makers at all levels

Bellagio Statement, UNEP 3 Step Strategic Approach

- Decision making should involve participation of all stakeholders
- Prevention and minimisation, treatment for reuse, and simulate natural self purification (emphasis on recycling)

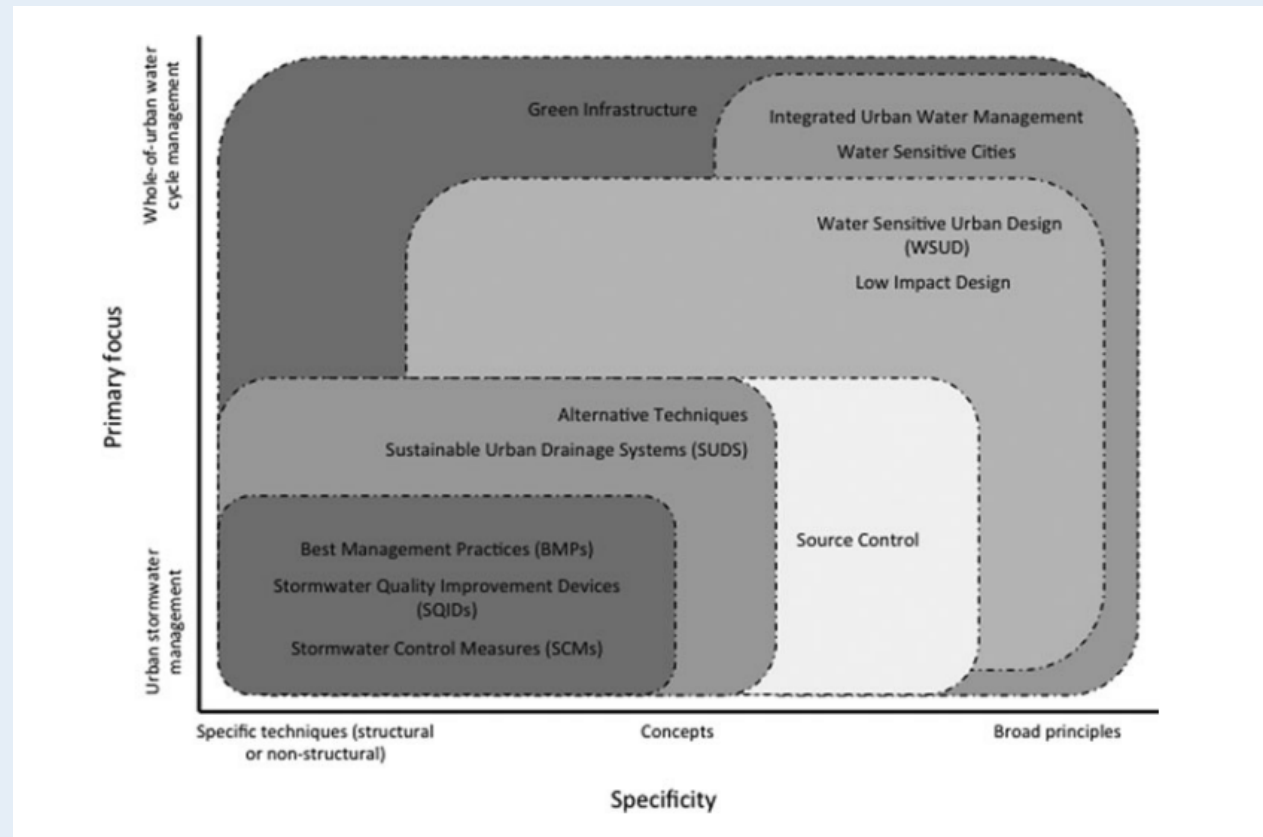
Progress

- Different models, concepts and sustainable technologies such as IUWM, WSUD, LID, GI etc. have been gradually shifting the urban water management approach in many places
- Each place is facing its own set of challenges; different countries have taken the principles of IUWM to fit their own needs and challenges

IUWM solutions

what's in common?

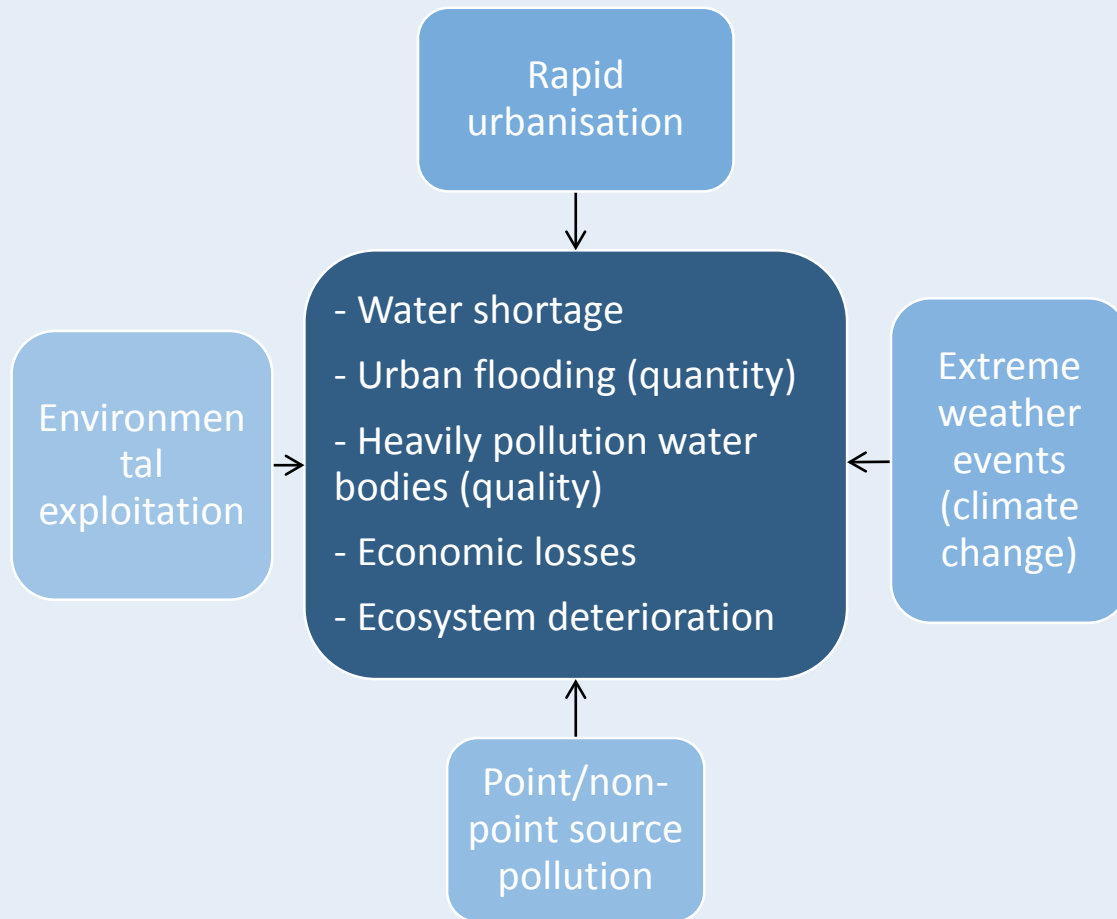
- Strive for economic, social, and environmental sustainability
- All parts of water cycle
- Local context considered
- Integrate water management with urban design and landscape planning
- 'natural' hydrology
- Interdisciplinary



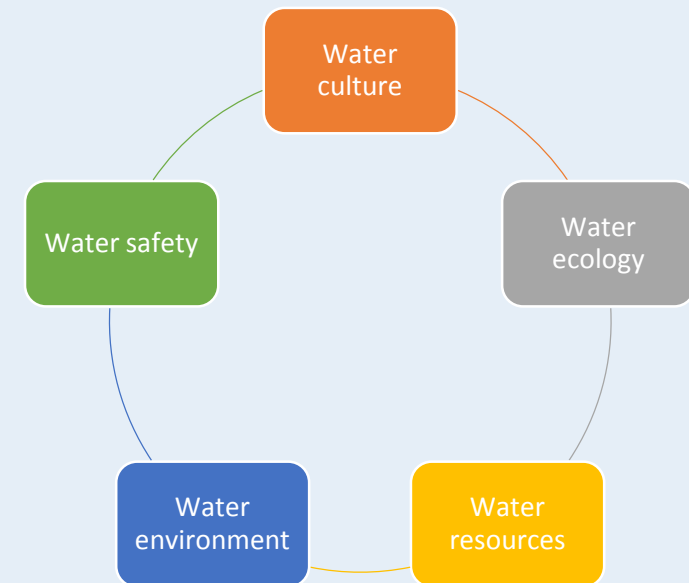
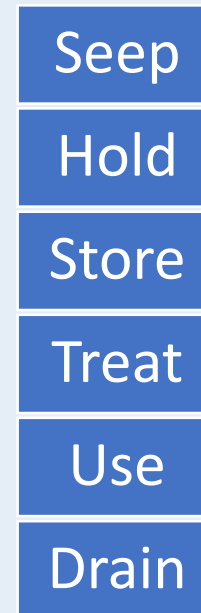
Evaluation criteria for IUWM

- **Water infrastructure as a socio-technical system that considers all parts of the water cycle**
 - Changes to infrastructure should be through technological advancement placed in the context of society (scientists, policy makers, cultural and user preferences, and markets and industries)
- **Coordinated decision making and management**
 - Conflicting interests and goals are inevitable
 - Sharing of knowledge, expertise, and opinions can facilitate more informed decisions, and gauge the progress against the plan and modify either accordingly
- **Diversified urban water infrastructure and service types**
 - “fit-for-purpose”, flexible and adaptive to fit the different dynamics between society and technology

Water problems in China



Sponge City aims to address multiple problem areas simultaneously





Heavily polluted water bodies



Water Shortage



Urban flooding



Ecosystem deterioration

Sponge City – Basic Principles

- Systematic approach towards management of city water, so that the urban surface and sub-surface water bodies can act as a sponge that absorbs and releases water when necessary, and purifies the water in that process
- A series of guiding principles and overall objectives and targets that can be extended and adapted into specific techniques requirements
 - Planning first
 - Ecosystem first
 - Safety first
 - Local context first
 - Integrated “construction”



Existing problems as identified by key participants

- The Sponge City initiative is in its second year. While some problems were anticipated many others were also easily identified in the process.
 - Coordination process between administrative units and stakeholders is weak and slow;
 - Lack of organisation and technical innovation in planning;
 - Unrealistic targets and objectives setting;
 - Problems identified do not always fit the local context
 - Lack of technical support
 - Source control projects are given lower priority over government controlled infrastructure projects
 - P3 projects are not contracted out in packages, reducing its efficiency
- What's different from past sustainable development initiatives?

Role of planning in China

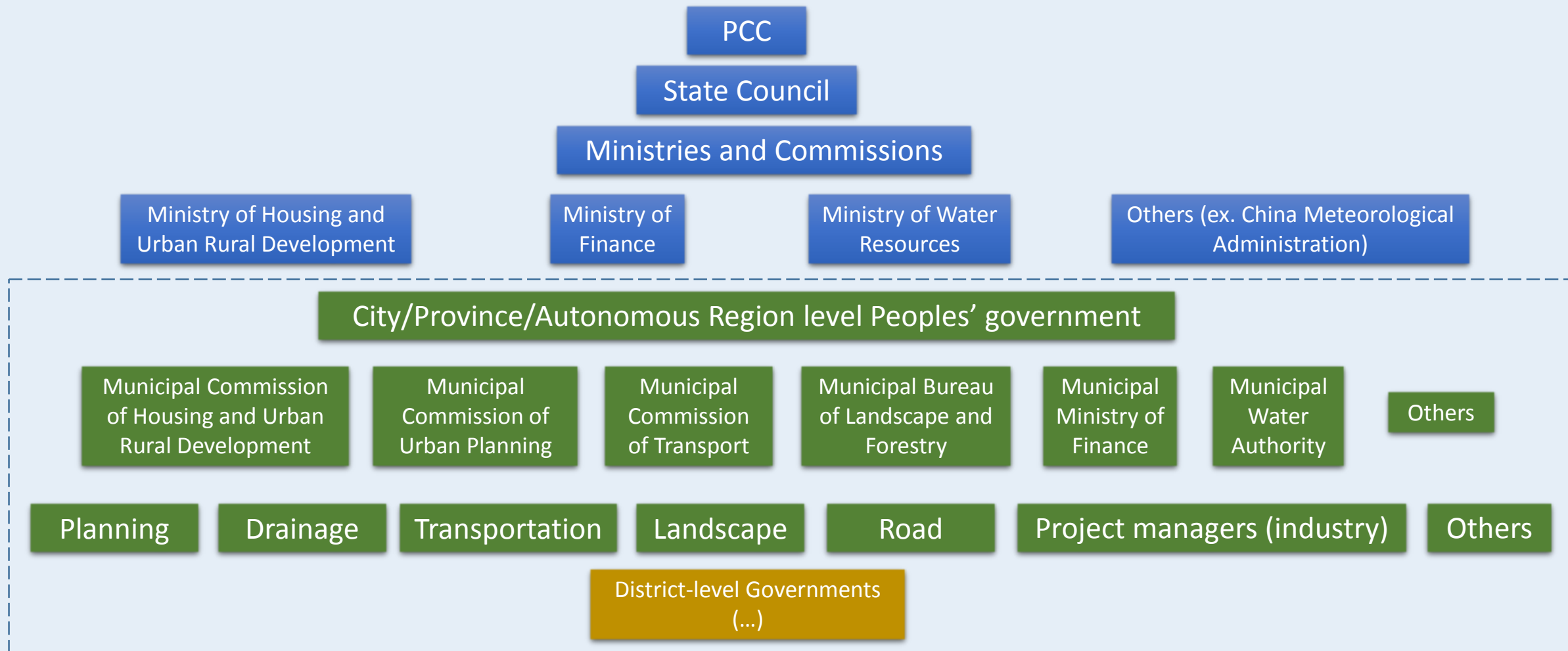
- “Planning leading” is the guiding principle
- Planning should precede design and construction
- There is a diverse range of (coordinative) plans serving different purposes:
 - Comprehensive plans
 - Translate ideas into implementation objectives and strategies
 - Special plans
 - Coordinate with various departments to create discipline-specific plans
 - Ex. Water system planning, greenfield system special plan, drainage and waterlogging plan
 - Detailed plans (regulatory plan and site plan)
 - Setting detailed targets, control areas, and requirements on implementation
- Challenge: integrate special plans to existing or future comprehensive and detailed plans

Water infrastructure as a socio-technical system that considers all parts of the water cycle

- Past failure in environmental governance in China can be attributed to the misalignment of central and local governments' interests and values
- Regulative and cognitive changes are not in balance with normative changes
- Additionally, there is usually a lack of knowledge support at the local level
- Sponge City:
 - Interests and values are better aligned
 - More opportunities for knowledge exchange and support in the form of conferences and technical seminars

Coordinated decision making and management

“Line” and “Block” of the administrative system (rough sketch)



Diversified urban water infrastructure and service types

- Challenging the top-down management approach because fitting the local context relies largely on the local interpretation of central policy
- Public-Private Partnership may inject much needed knowledge and technical support, but may also lead to blind uptake of technologies without considering the needs
- Over-simplification and lack of innovative solutions
 - Striving for “fame” rather than solid results



Conclusion and future works

- Using the criteria derived from brief overview of IUWM, a preliminary review of the sponge city initiative was completed to understand its current progress and challenges
- The role of planning in China was briefly examined
- Information presented in this paper will help define research objectives to look into dynamics between urban planning and urban water management, and examine whether the top-down planning system is an enabling factor or inhibiting the transition towards integrated urban water management?
 - Explore the benefits of “planning leading” on urban water management
 - “problem oriented” approach, how effective? Solving the right problems?