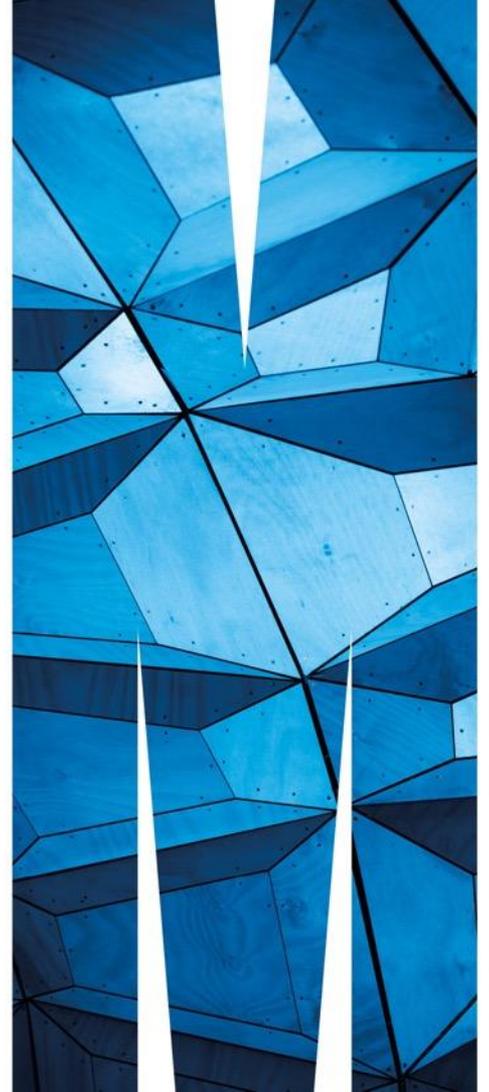


A preliminary model for industrial cluster water stewardship projects in China

Michael Spencer



Today's Presentation

- Water issues in China
- Study regions and goals
- Draft model based on literature
- Empirical testing of model
- Revised model
- Provisional typology and program model
- Conclusions

CHINA'S WATER CRISIS

- Renewable freshwater per capita less than a third of the global ave. and only about one eighth of North America (The World Bank, 2019)
- 2011 - two-thirds of cities suffered shortages, more than 40% of rivers severely polluted, 80% of lakes suffer eutrophication and 300 million rural residents lack safe drinking water (Liu and Yang, 2012)
- PM Wen Jiabao said water shortages threaten “the very survival of the Chinese nation” (The Economist, 2013)
- China, India and Pakistan, “simply do not have sufficient water to ensure food and energy security plus develop under the current export-led economic growth model (Hu and Tan 2018)

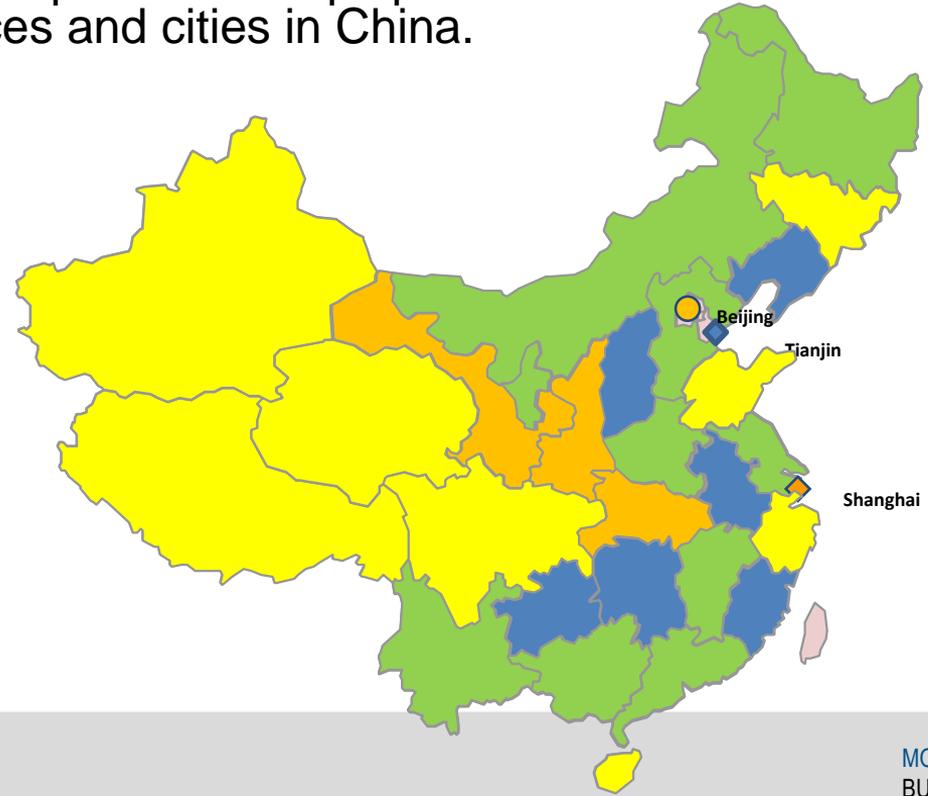
MOMENTUM FOR CHANGE BUILT FROM MID-2000s

- 10 year program announced in 2011 to upgrade 46,000 dams, build new dams and canals and the world's largest and longest water transfer project from the Yangtze to Northern China
- The 2015 Water Ten plan and law to clean-up water quality, reduce the proportion of severely polluted water bodies and improve drinking water quality
- Penalties were increased ten-fold to one million RMB
- National two-year enforcement inspections resulting in factory closures, suspensions, charges, arrests and hundreds of imprisonments (including party officials)

CENTRAL ENVIRONMENTAL INSPECTOR GROUP

From 2016, Central Environmental Inspection Groups planned to take 2 years to inspect all provinces and cities in China.

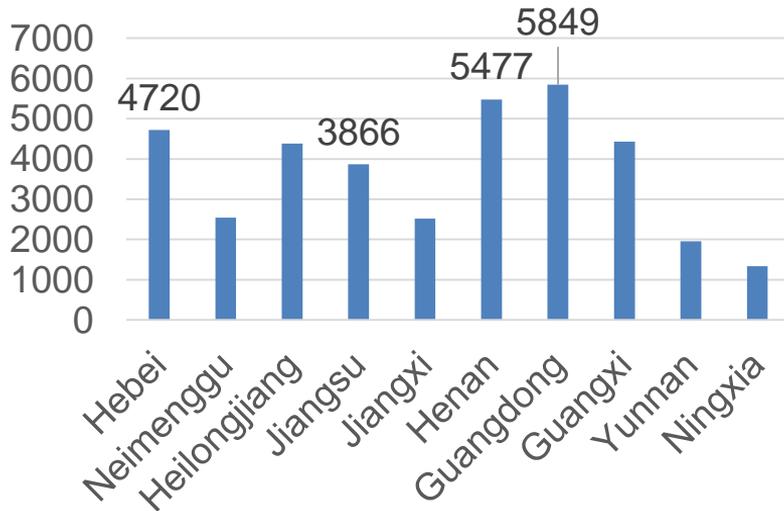
- the first batch
(8)
July 2016
- the second batch
(7)
November 2016
- the third batch (7)
April 2017
- the fourth batch (8)
August 2017
- Revisit
(10)
June 2018



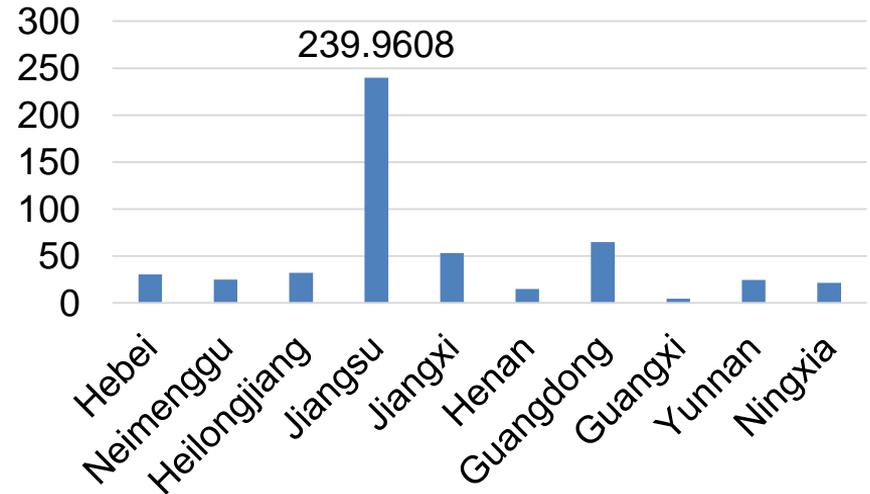
CONSEQUENCES FROM THE “REVISIT” PROGRAM

1500 people held accountable in Yunnan; 162 people detained for environmental violation in Guangdong; authorities issued fines of 240 million yuan in Jiangsu.

Accepted Cases



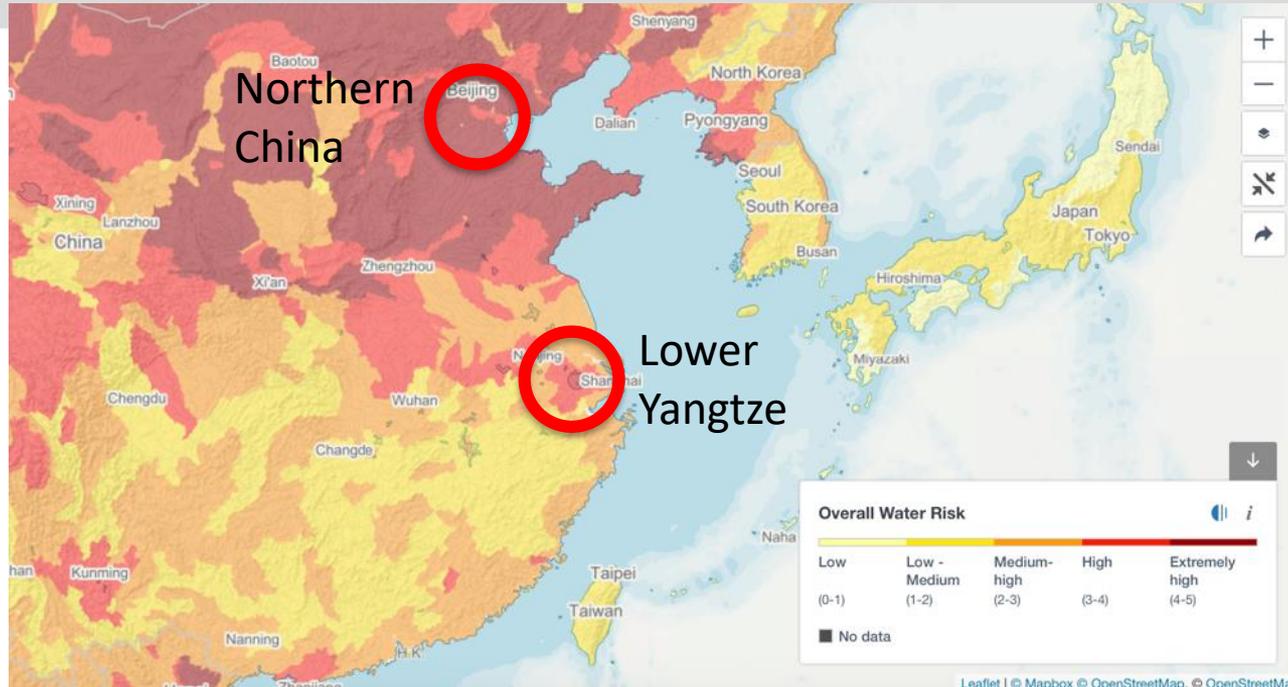
Fines/million yuan



GOVERNMENT WANTED TO AVOID ONE SIZE FITS ALL

- Gangie Li (MEP) said at National Congress enforcement mechanisms starting to transform pollution problems
- Subsequently, change needed to be handled sensitively and Ministry was opposed to a one-size-fits-all approach
- Violators should be given time to improve so that only those with no value or hope of improvement are shut down (Xu, 2017b).

PROJECT STUDY AREAS



North: Air pollution, water scarcity and water pollution

Yangtze: Water pollution and high levels of water use

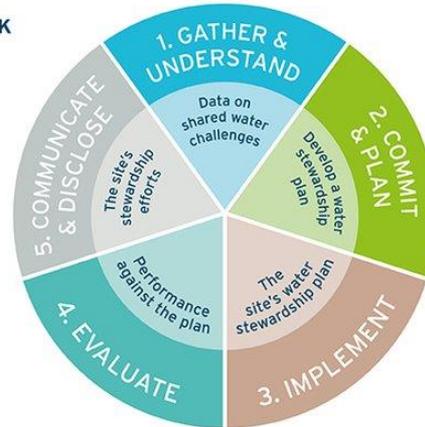
THE AWS STANDARD V2.0

AN ACCESSIBLE 'HOW TO' FRAMEWORK FOR SITES TO IMPLEMENT WATER STEWARDSHIP

THE AWS STANDARD FRAMEWORK IS BUILT AROUND FIVE STEPS:

1. GATHER AND UNDERSTAND
2. COMMIT AND PLAN
3. IMPLEMENT
4. EVALUATE
5. COMMUNICATE AND DISCLOSE

Download the new
AWS Standard V2.0
at www.a4ws.org



THE STANDARD IS INTENDED TO ACHIEVE FIVE MAIN OUTCOMES:

-  GOOD WATER GOVERNANCE
-  SUSTAINABLE WATER BALANCE
-  GOOD WATER QUALITY STATUS
-  IMPORTANT WATER-RELATED AREAS
-  SAFE WATER, SANITATION AND HYGIENE FOR ALL (WASH)

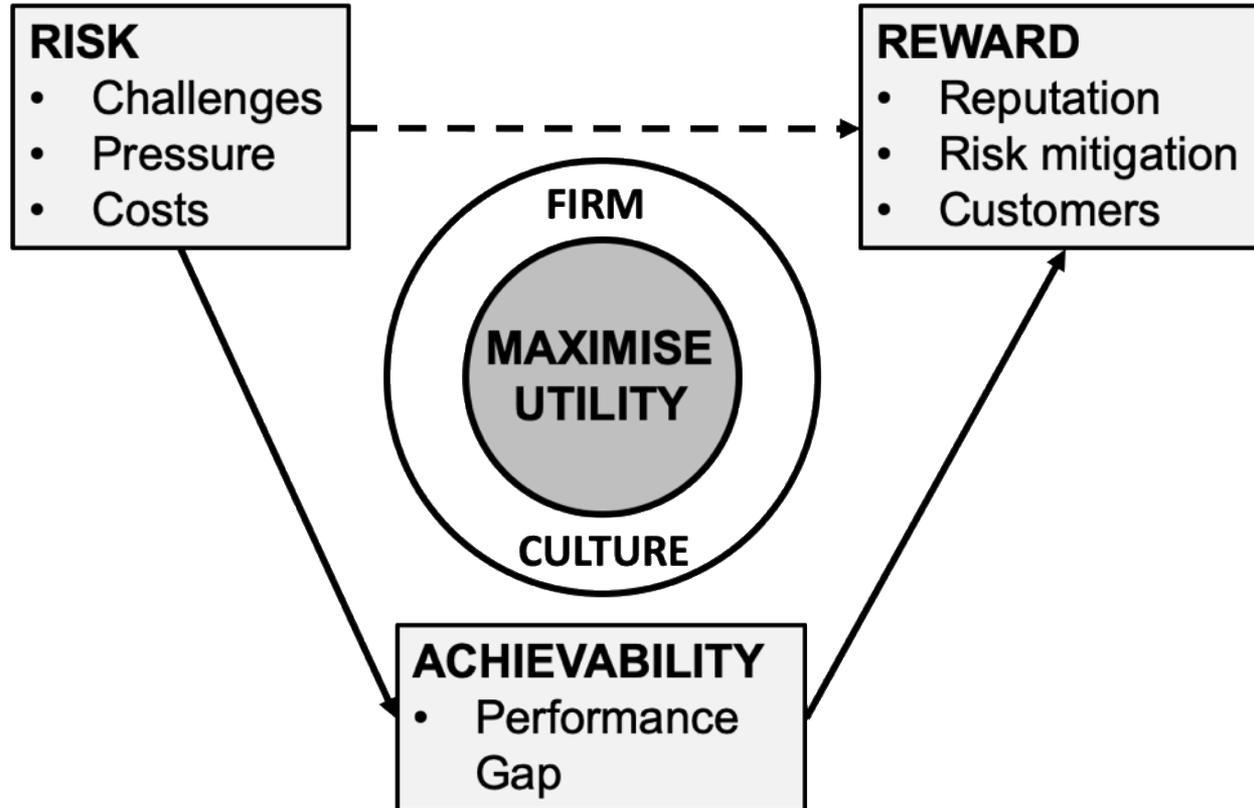
Traditional (Friedman, Coase etc.)

- Rational Choice
- Assume actors maximize individual/firm utility
- Hypothesizes response to action on externalities
- Market failure

Behavioral (Jolls, Sustain, Thaler)

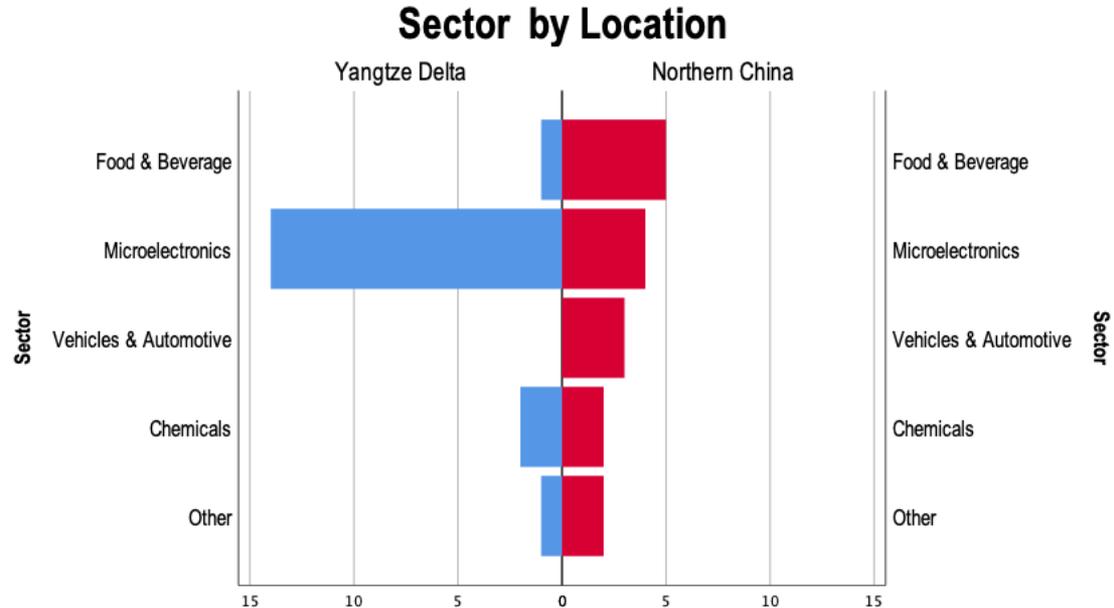
- Bounded Rationality (Simon)
- Understanding human behavior (psychology)
- Systematic behavior can be modelled (predictive)
- Decision failure (Shogren & Taylor)

RESEARCH MODEL FROM LITERATURE



Research methodology

- Quantitative (N=34) & qualitative research
- Questionnaire
- Interviews



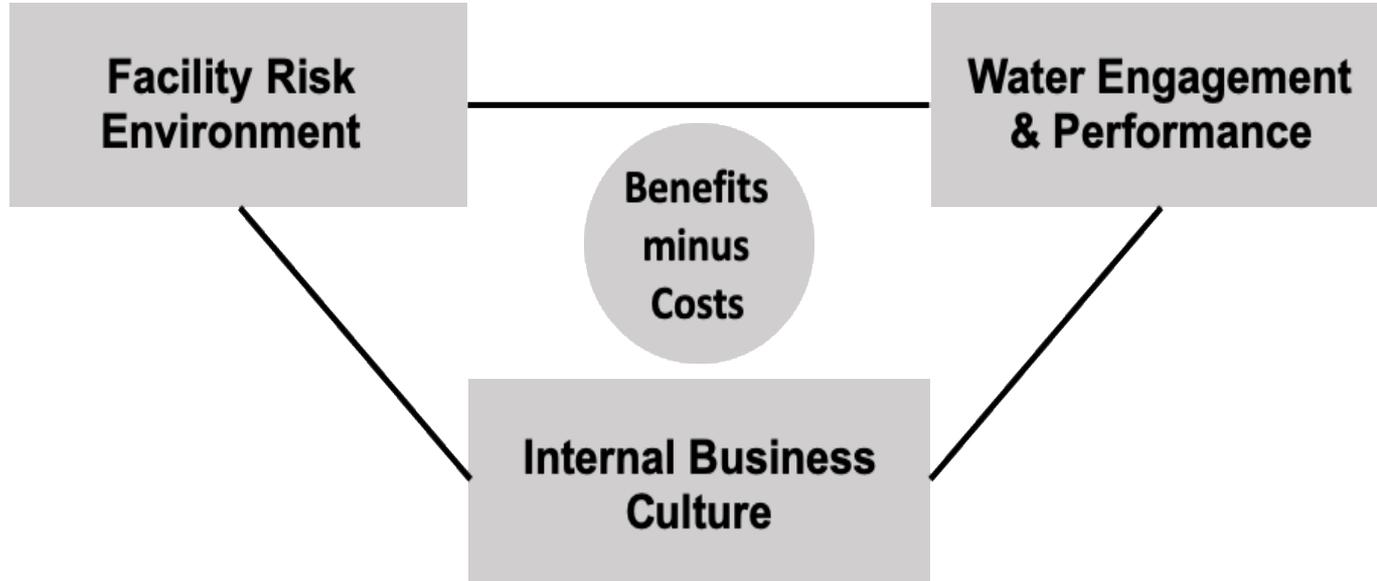
HIGH LEVEL FINDINGS (1)

- Adopt/Not Adopt was not based on rational choice or perceived benefits exceeding perceived costs
- Cultural lens included:
 - Non-adopters more likely to perceive government as responsible
 - Adopters focus on environment and CSR performance
- Risk lens included:
 - Physical risk not sufficient without government, customer involved
 - Cost as a metaphor for risk only relevant to facilities on the edge
 - But all are interested in opportunities to improve business ops.

HIGH LEVEL FINDINGS (2)

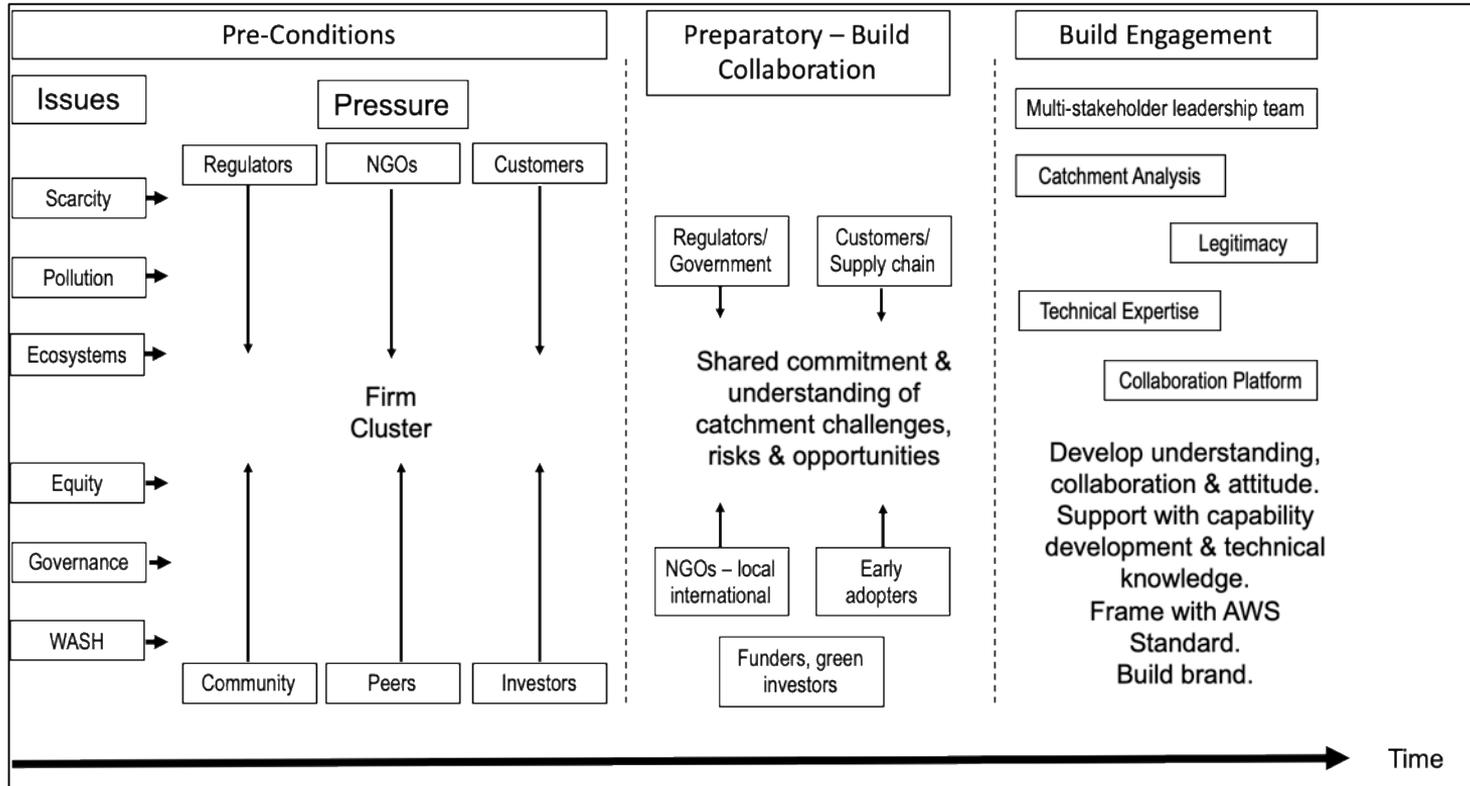
- Reputation lens included:
 - Adopters place a higher value on reputation as well as customer and government relations
 - Non-adopters more focused on regulatory compliance
- Performance lens included:
 - Adopters are already more engaged in water improvements
 - Adopters are well on the way to AWS level performance, but
 - Facilities indifferent to AWS tend to be best performers

MODIFIED MODEL



- Support from local government official and customers
- Multi-stakeholder collaboration involving EPB, business, WWF China, AWS
- Commenced with training to introduce ideas about water management, AWS and improvement opportunities
- Deepened understanding of catchment issues
- Led to financial support from both supply chain leaders and municipal government
- Six local enterprises seeking AWS and providing leadership

Provisional model for cluster projects



FORTHCOMING PUBLICATIONS

- Spencer, M and Stanley, J (forthcoming 2019), "Business and the global water crises: an empirical study of motivations and constraints for corporate water stewardship in two industrial areas of China" (TBC)
- Spencer, M (forthcoming 2020), 'Attitudes, obstacles and incentives: why the culture of water needs to change to build participation and implement behaviour solutions to water crises' in *Sustainable Use of Water by Industry: Perspectives, Incentives, and Tools*, edited by Cheryl Davis and Erik Rosenblum (International Water Association)
- Spencer, M and Xu, Z (forthcoming 2020), 'Water stewardship; engaging business, civil society and government in collaborative solutions to China's freshwater challenges' in *Non-State Actors and Environmental Governance in China*, edited by Oran Young, Yijia Jing and Dan Guttman (Palgrave Macmillan)

A preliminary model for industrial cluster water stewardship projects in China

Michael.Spencer@Monash.Edu