



UNIVERSITY OF
BIRMINGHAM

UNESCO-IHE
Institute for Water Education



SWITCH

Managing Water in the City of the Future

Kala Vairavammoorthy



Water Tribune 27th June 2008
EXPO Zaragoza 2008

Contents

- **UWM - where are we ?**
- **Future Pressures**
- **New Thinking – SWITCH**
- **Summary**

Contents

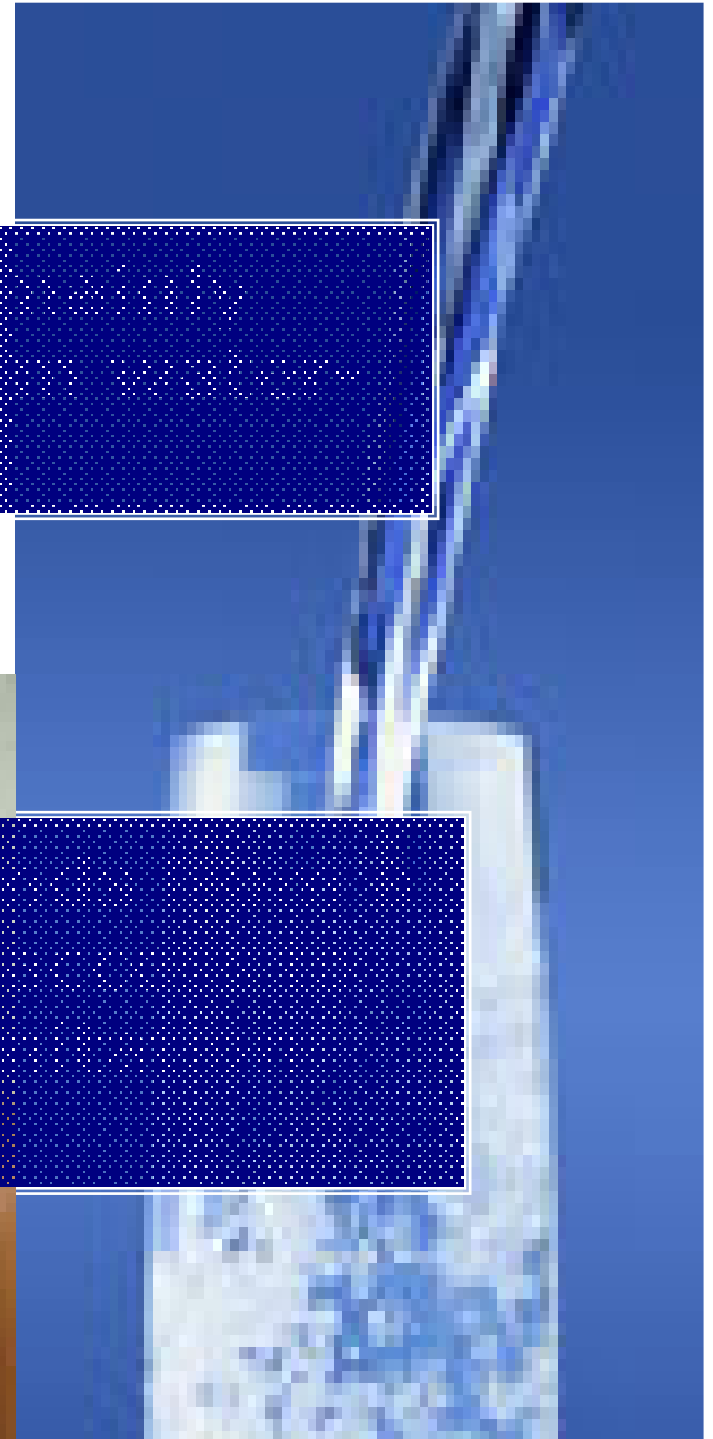
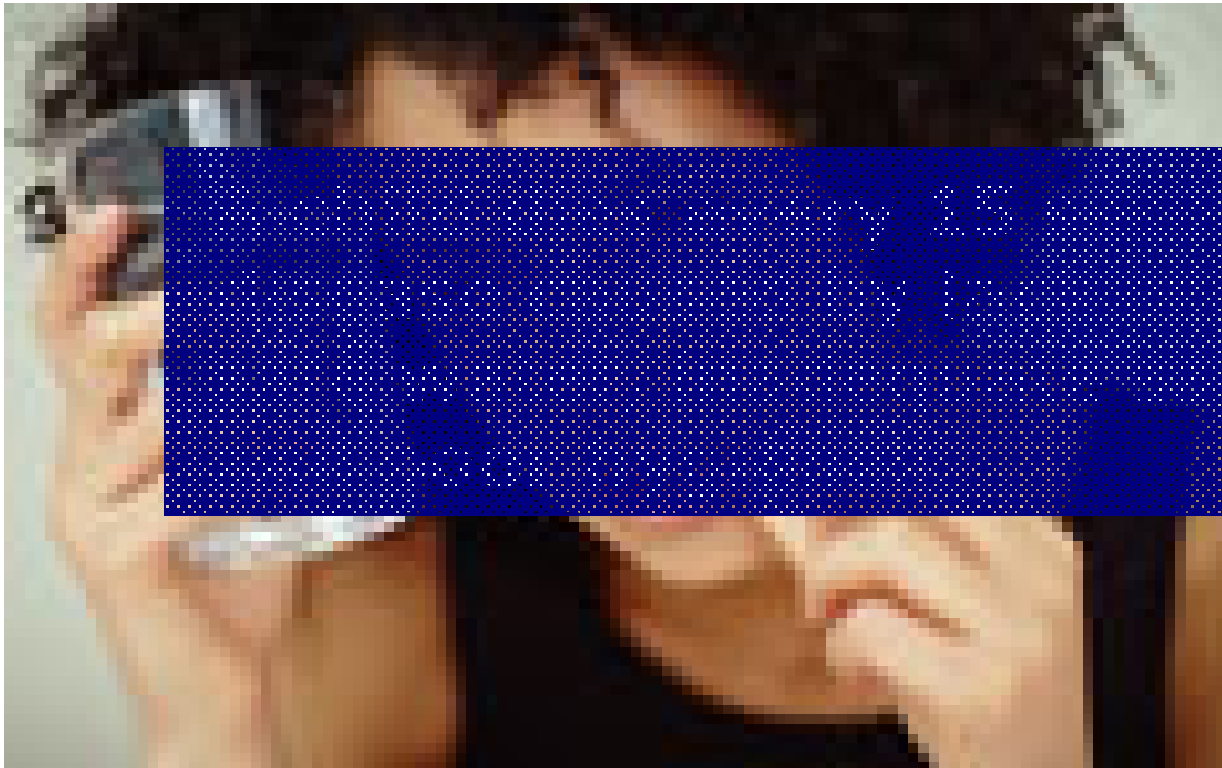
- **UWM - where are we ?**
- Future Pressures
- New Thinking – SWITCH
- Summary

Water is Life!

.....

related diseases.

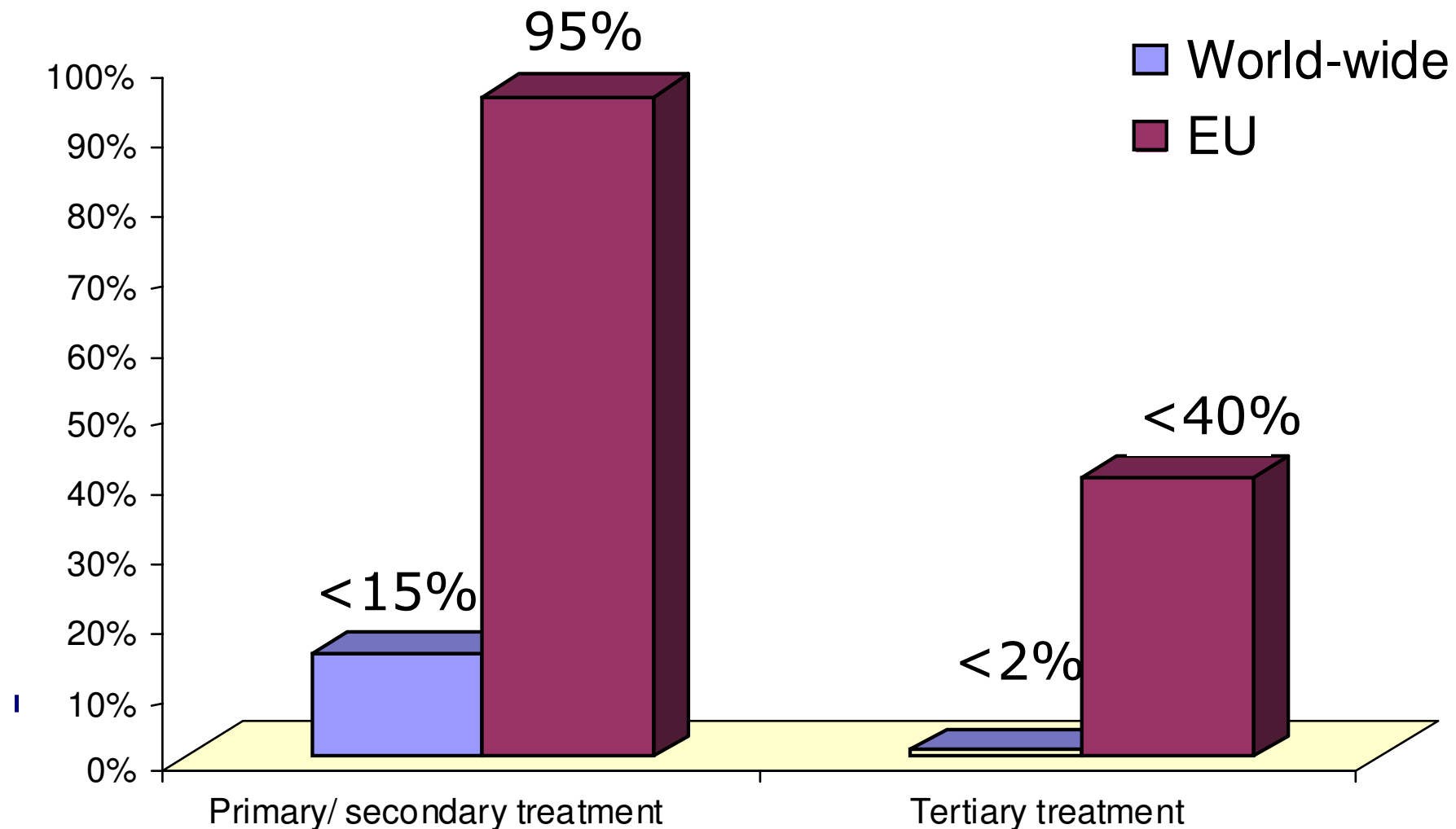
Water is also Killer no. 1







Most wastewater is not treated!





Contents

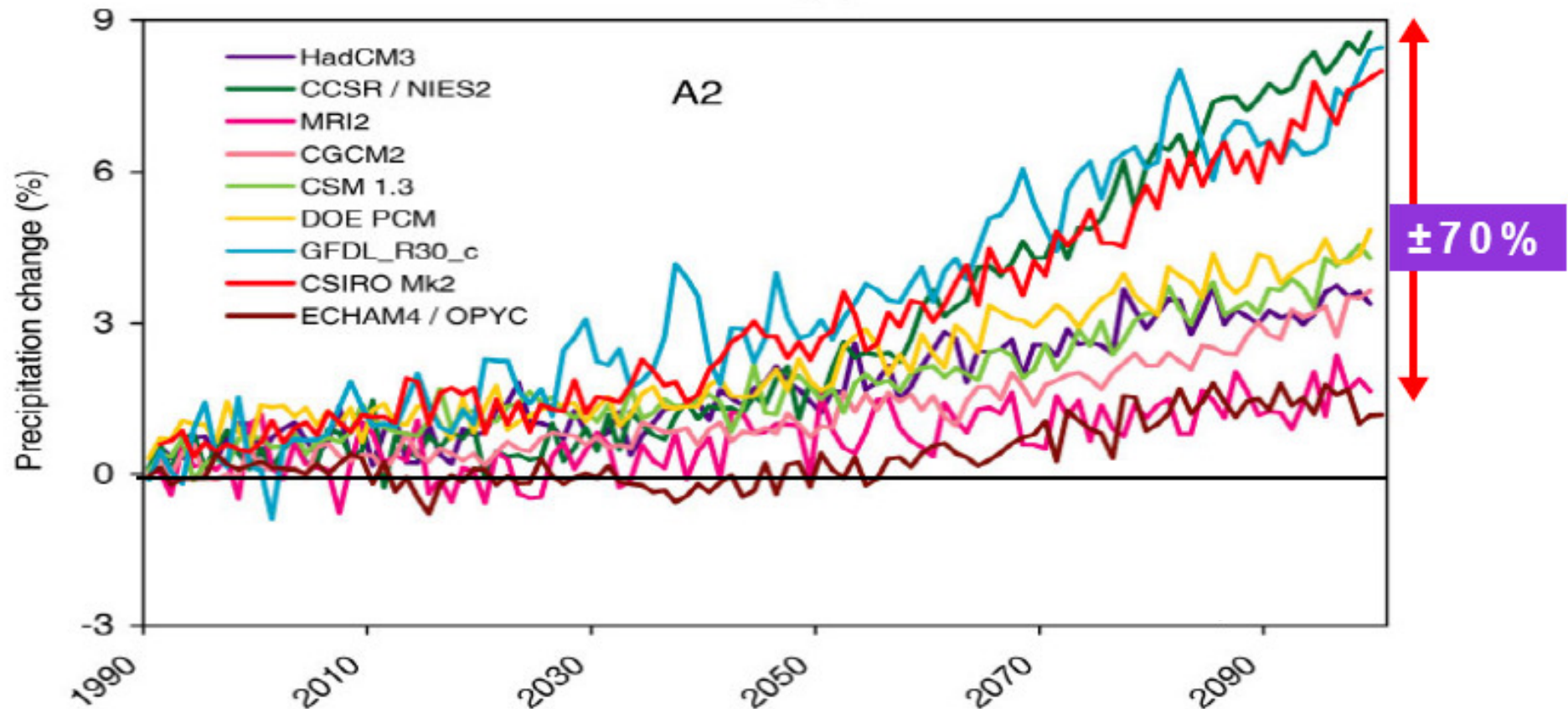
- UWM - where are we ?
- **Future Pressures**
- New Thinking – SWITCH
- Summary

Hazards - New challenges

- **Entire earth system is changing!**

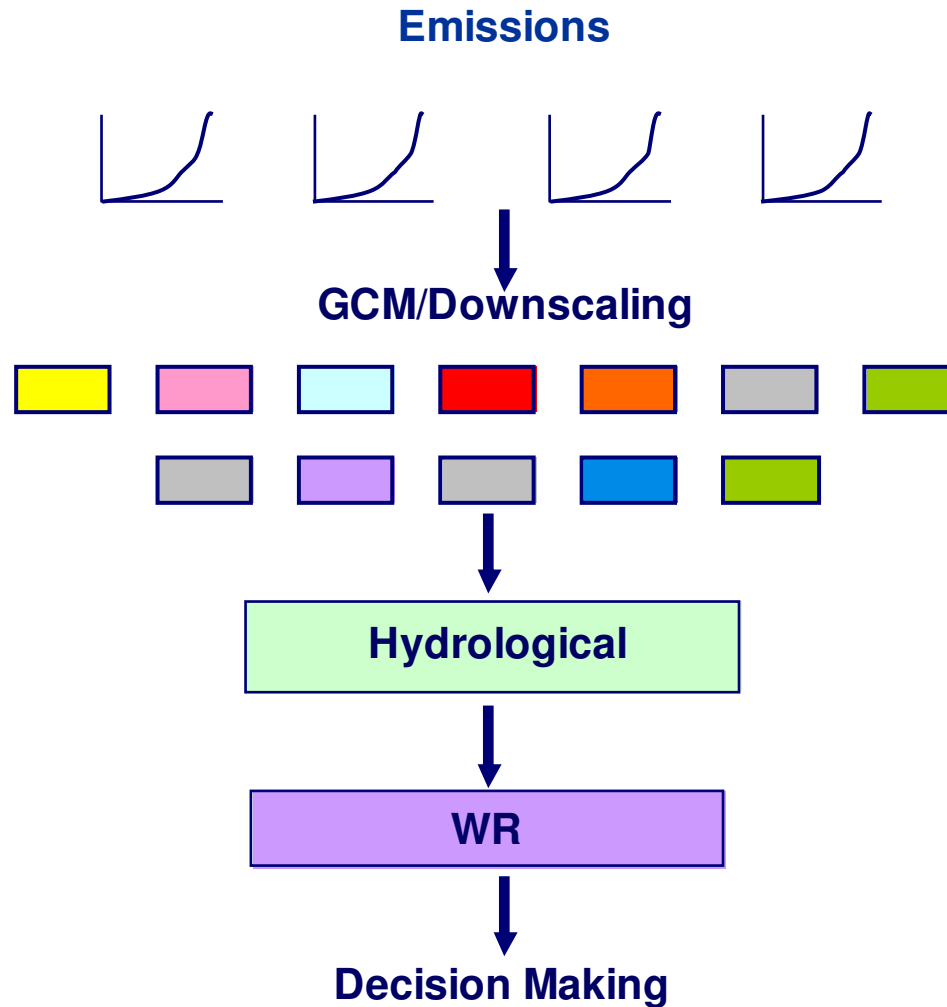


Changes - Uncertainties

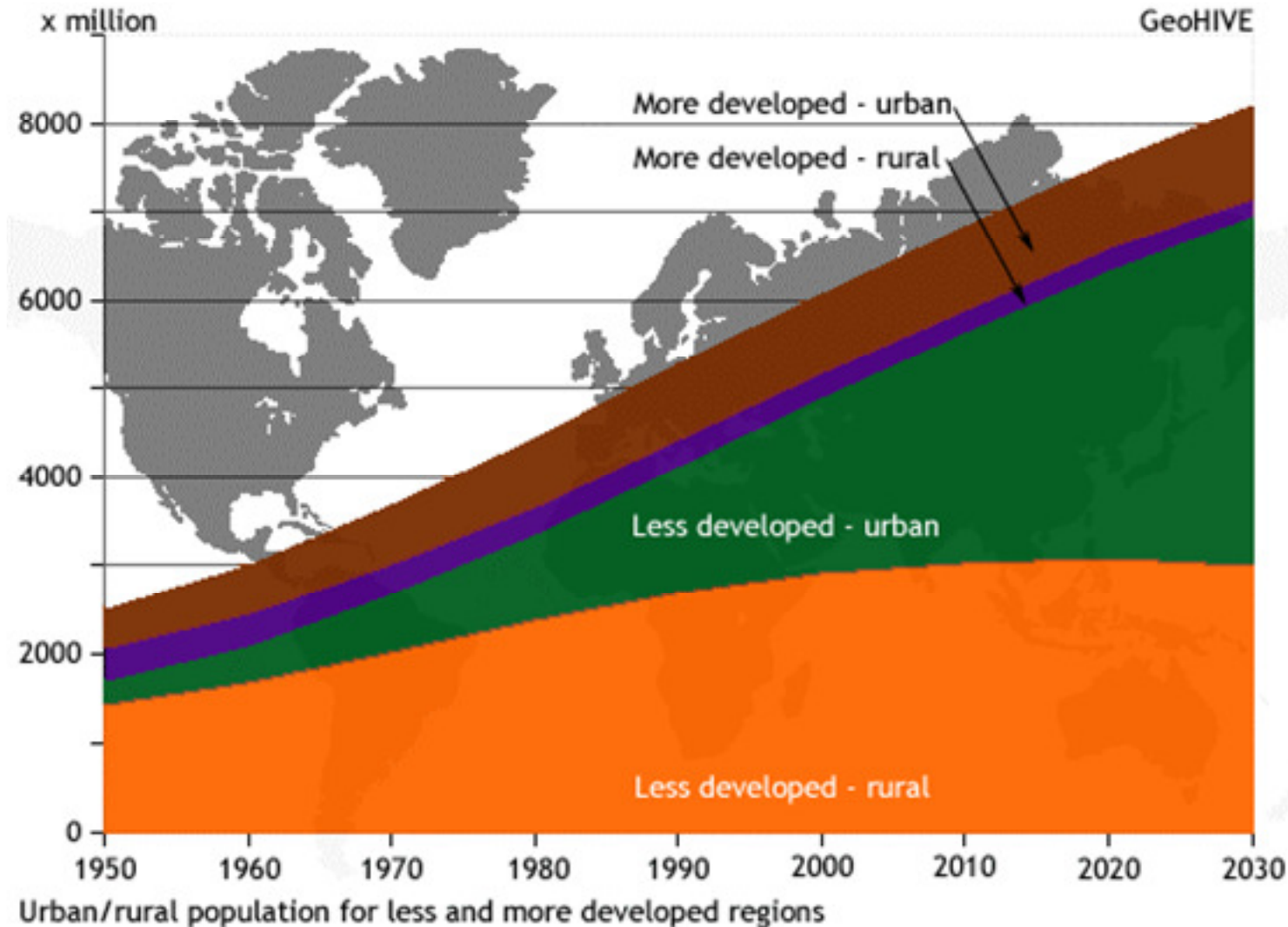


Source: Hadley Centre

Uncertainties in predictions

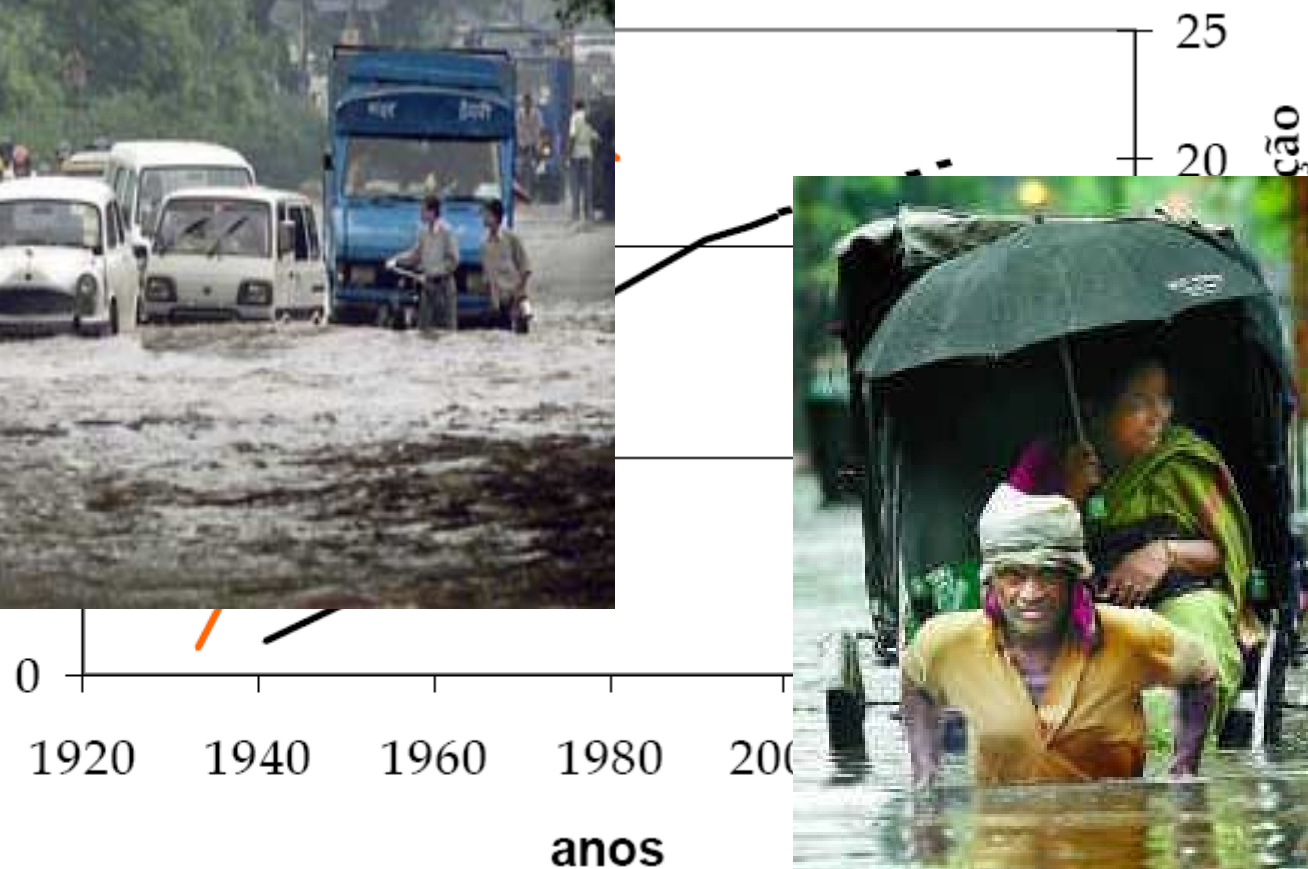


World population prospects 1950 - 2030



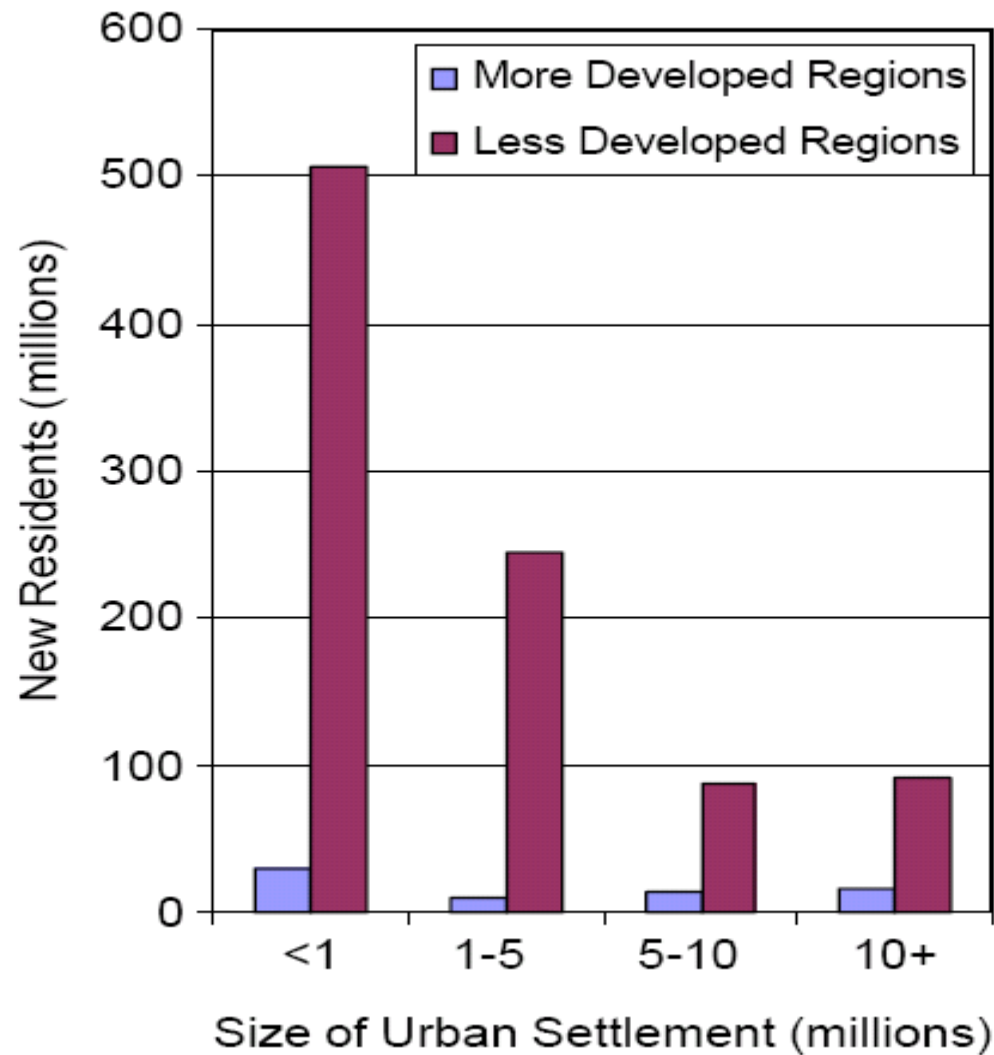
Source: UN (2004)

Relationship between population and flood events (Belo Horizonte, Brasil)



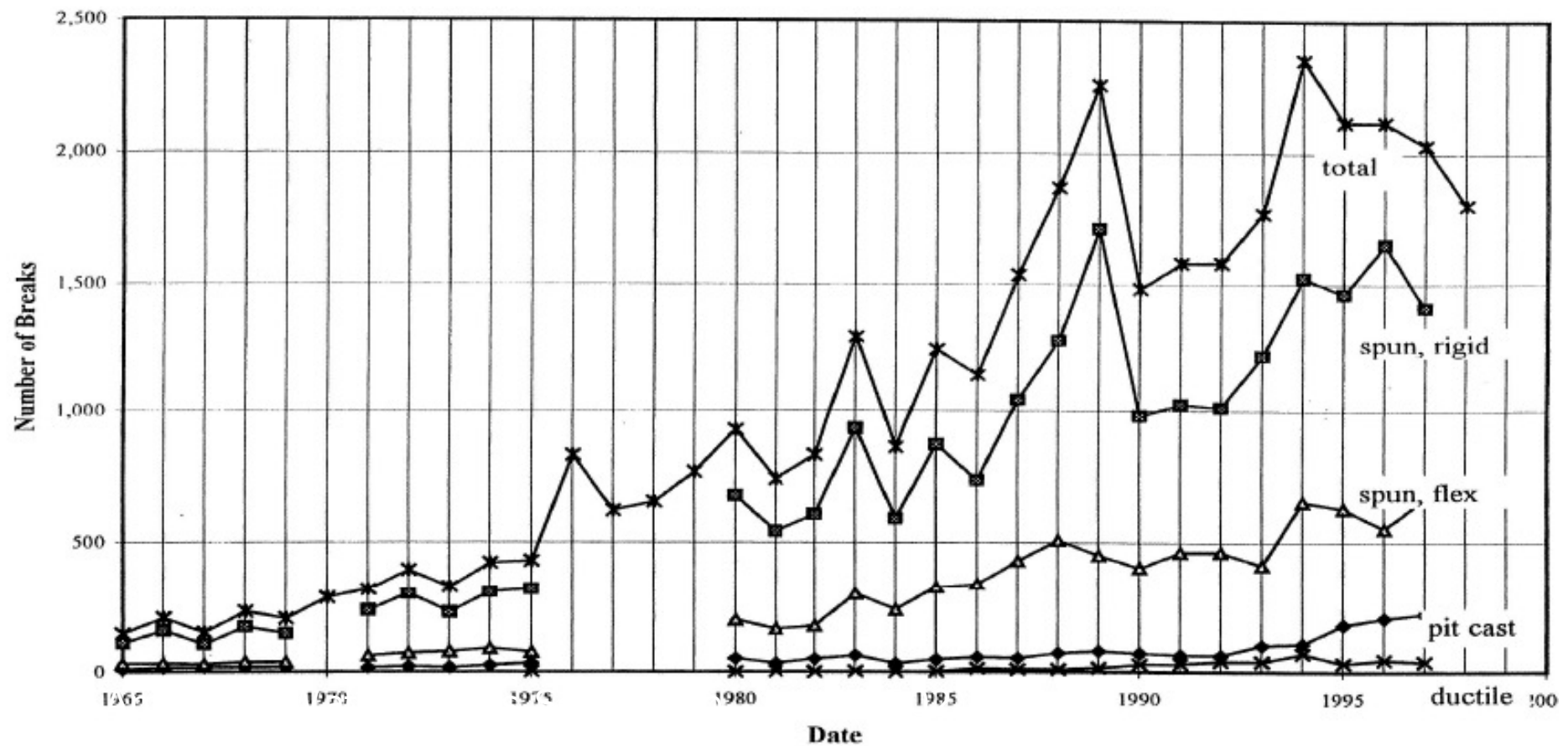
Source: Tucci (2005)

Number of urban residents added to the urban milieu between 2000 and 2015



Source: UN (2003)

Main Breaks since 1965 (USA)



Contents

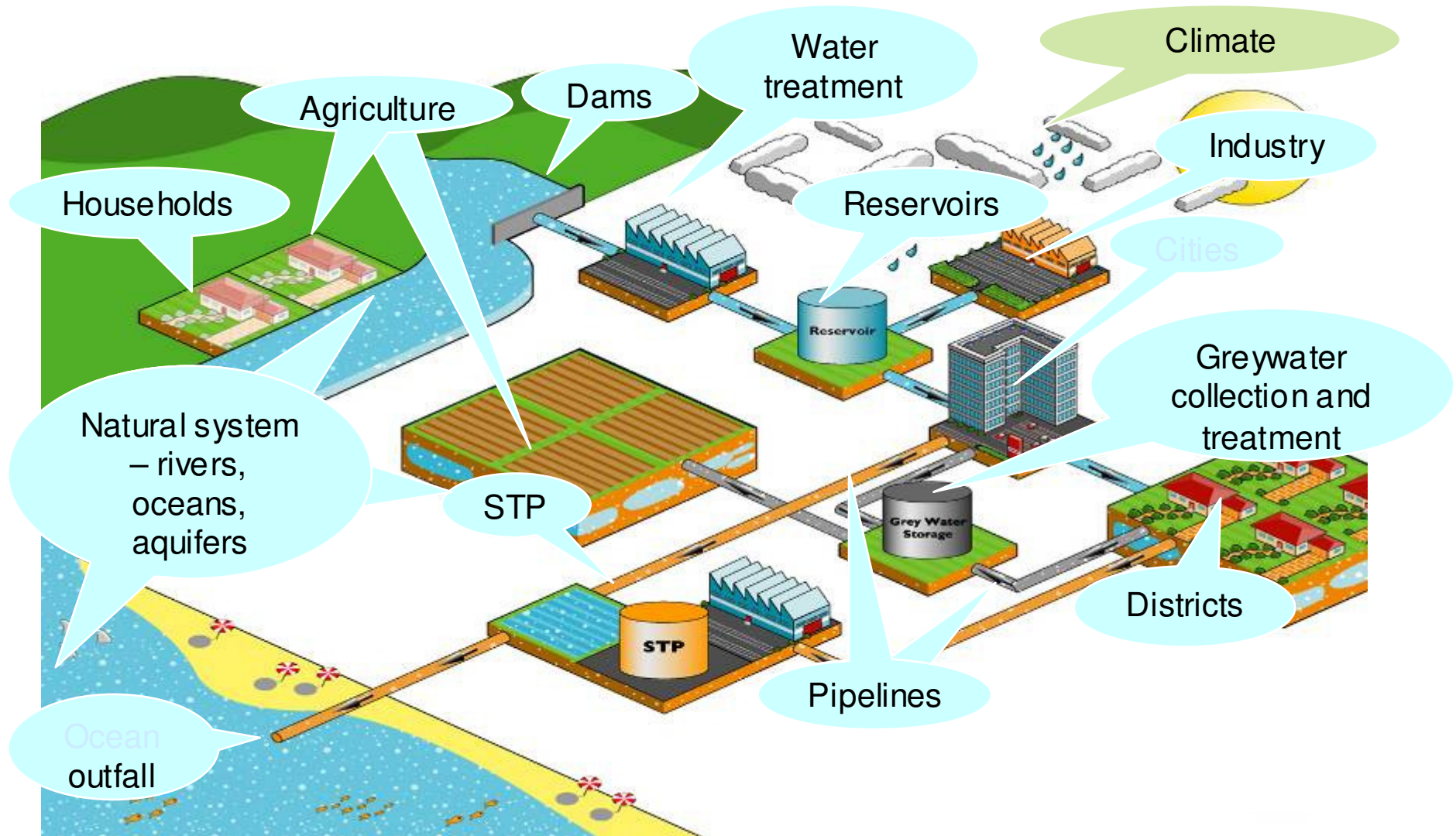
- UWM - where are we ?
- Future Pressures
- **New Thinking – SWITCH**
- Summary



SWITCH

- **Lead by UNESCO-IHE**
- **Largest water related research project funded by EU (25M Euros)**
- **Completes in 2011**

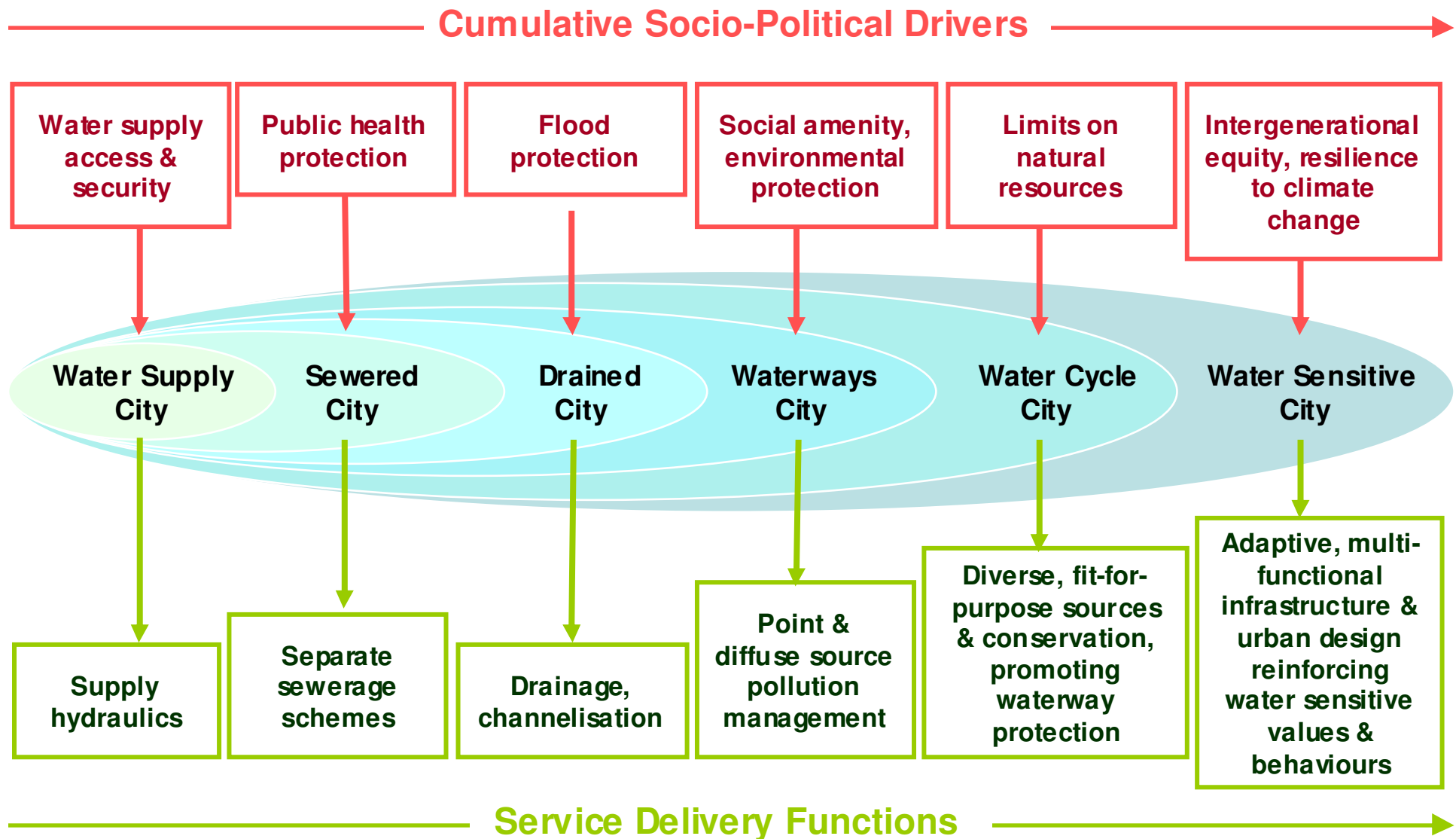
Research covers the entire water cycle



New challenges – New Thinking

- Solution being developed based on key concepts of:
 - interventions over the entire urban water cycle;
 - governance & financial management structures covering the entire urban water cycle.
 - resilience of urban water systems to global change pressures – flexible design;
 - reconsideration of the way water is used (and reused);
 - greater application of natural systems

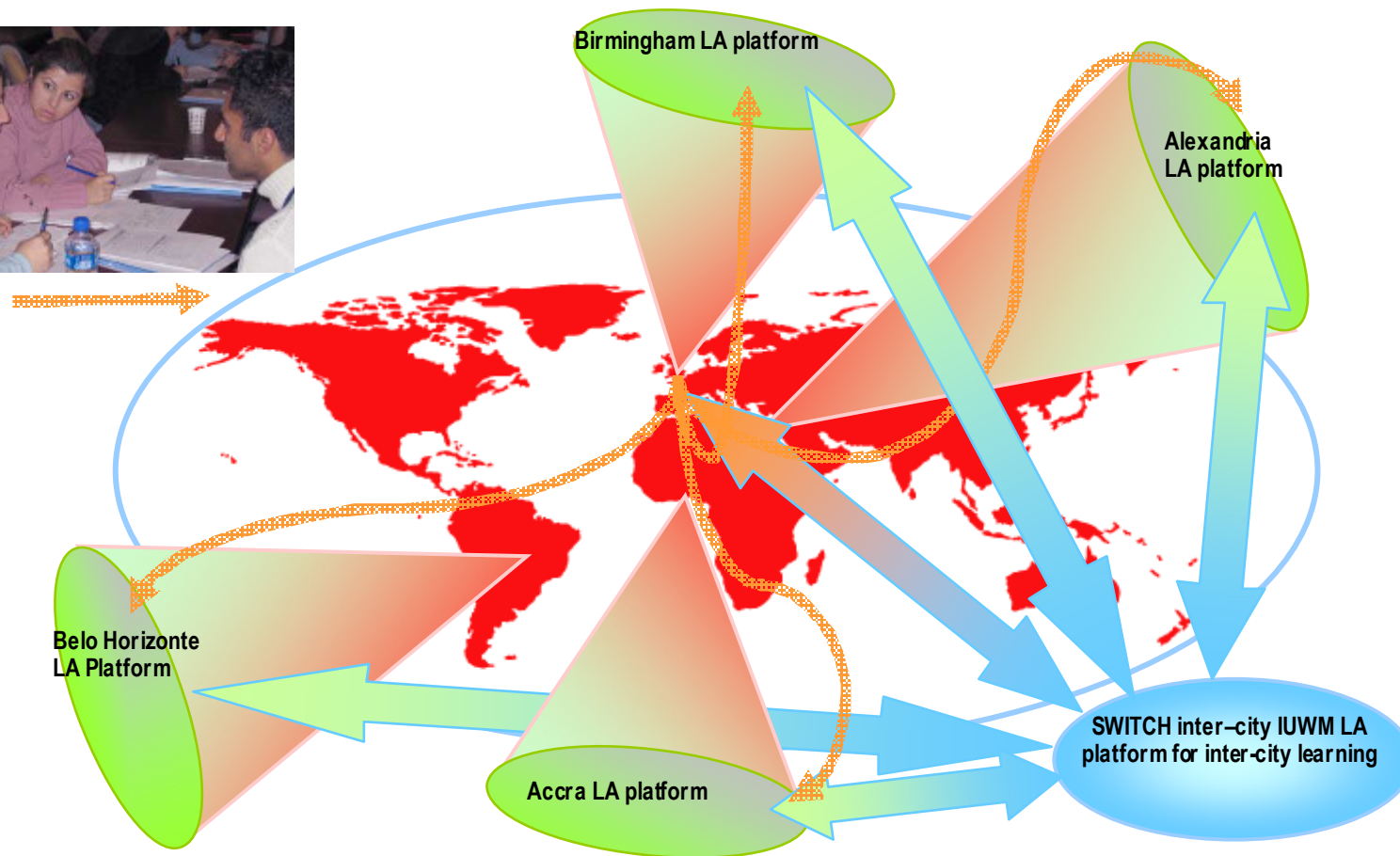
Water Sensitive City: Hydro-Social Contract

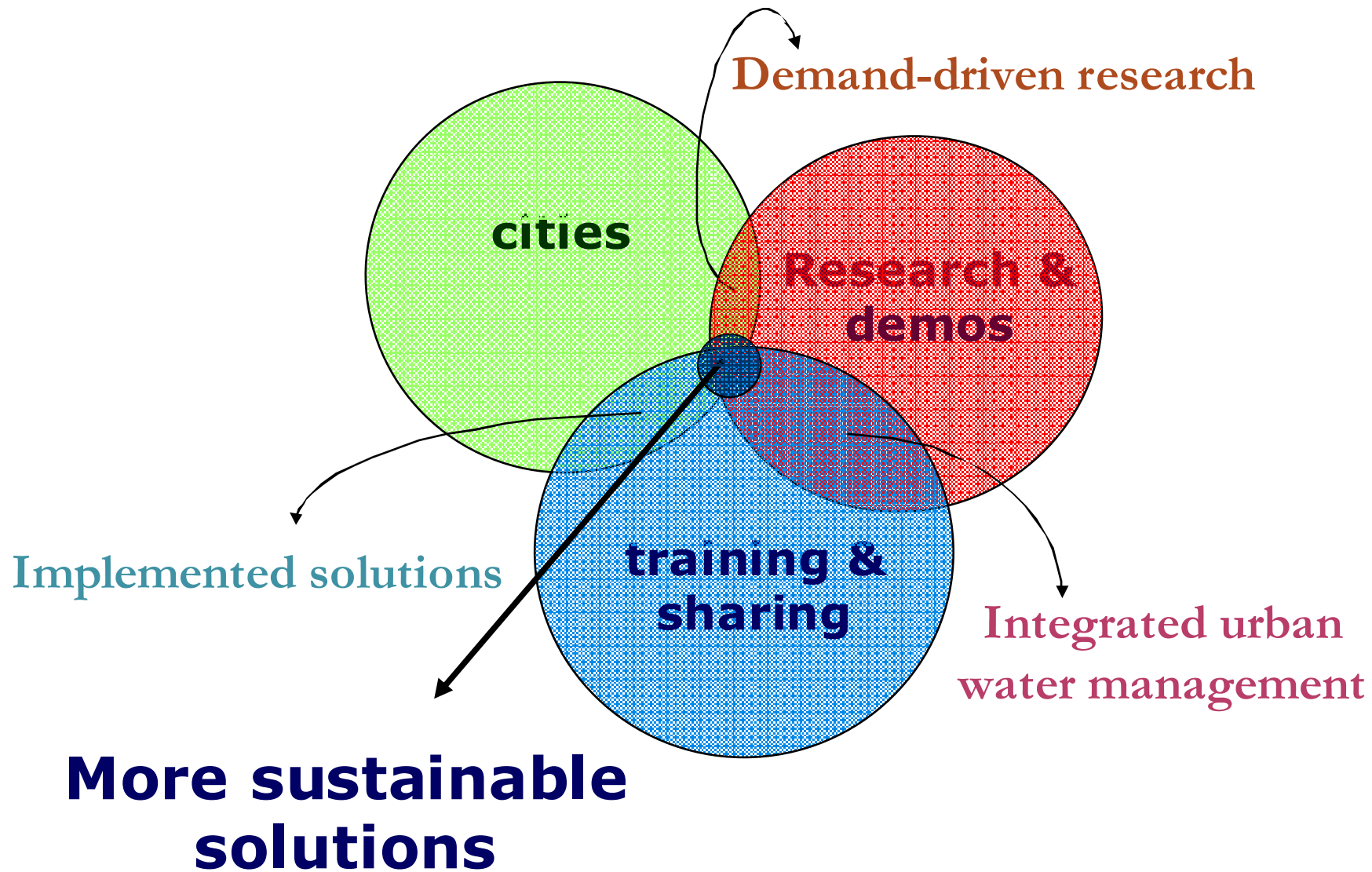


10 global cities



Learning Alliances





SWITCH - Themes



SWITCH planning cycle

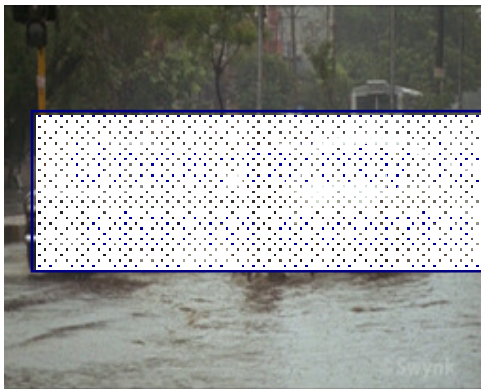


SWITCH planning cycle

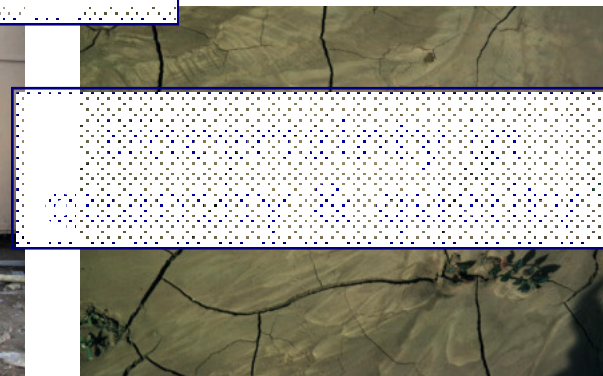


New challenges – New Thinking

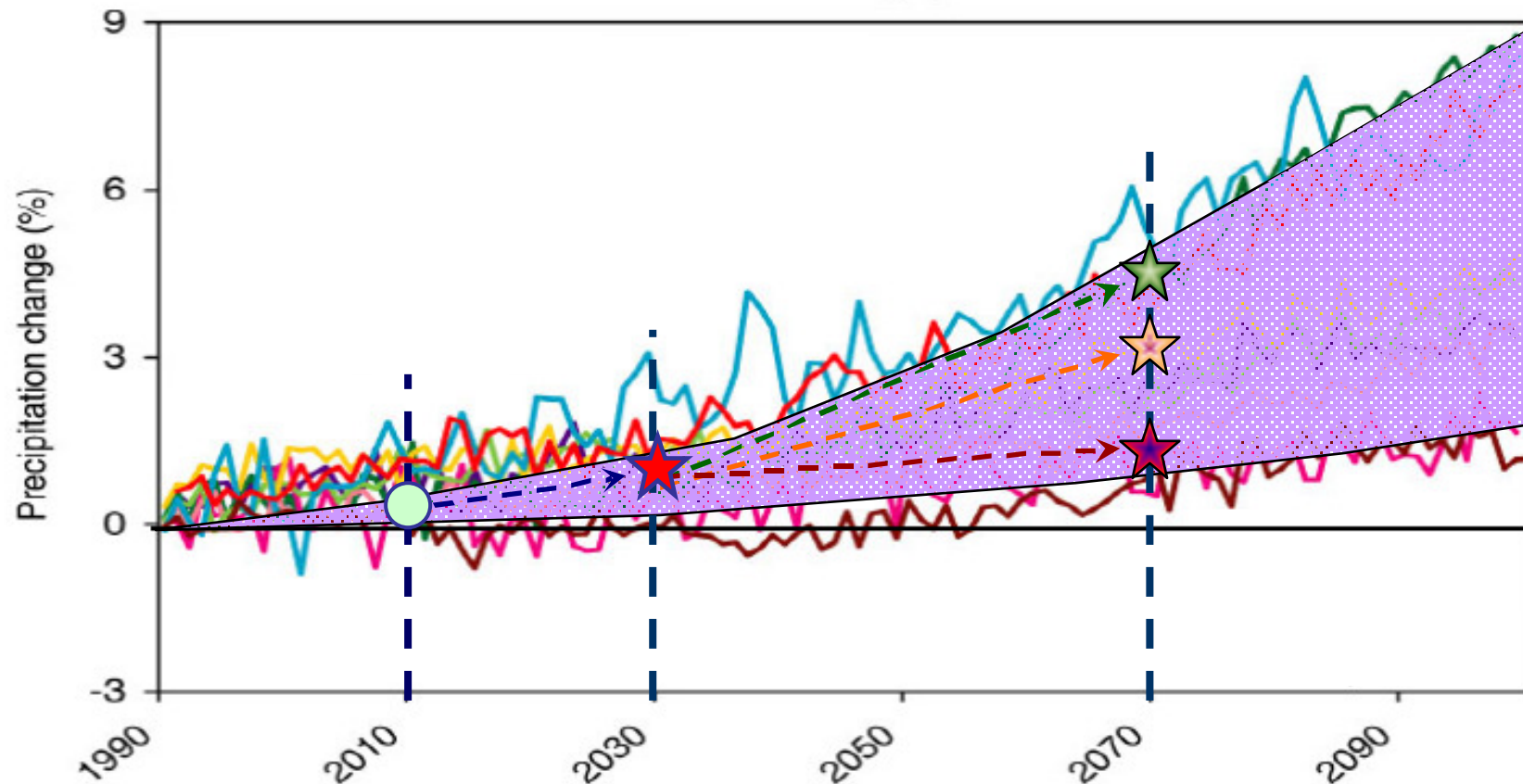
- Entire earth system is changing!



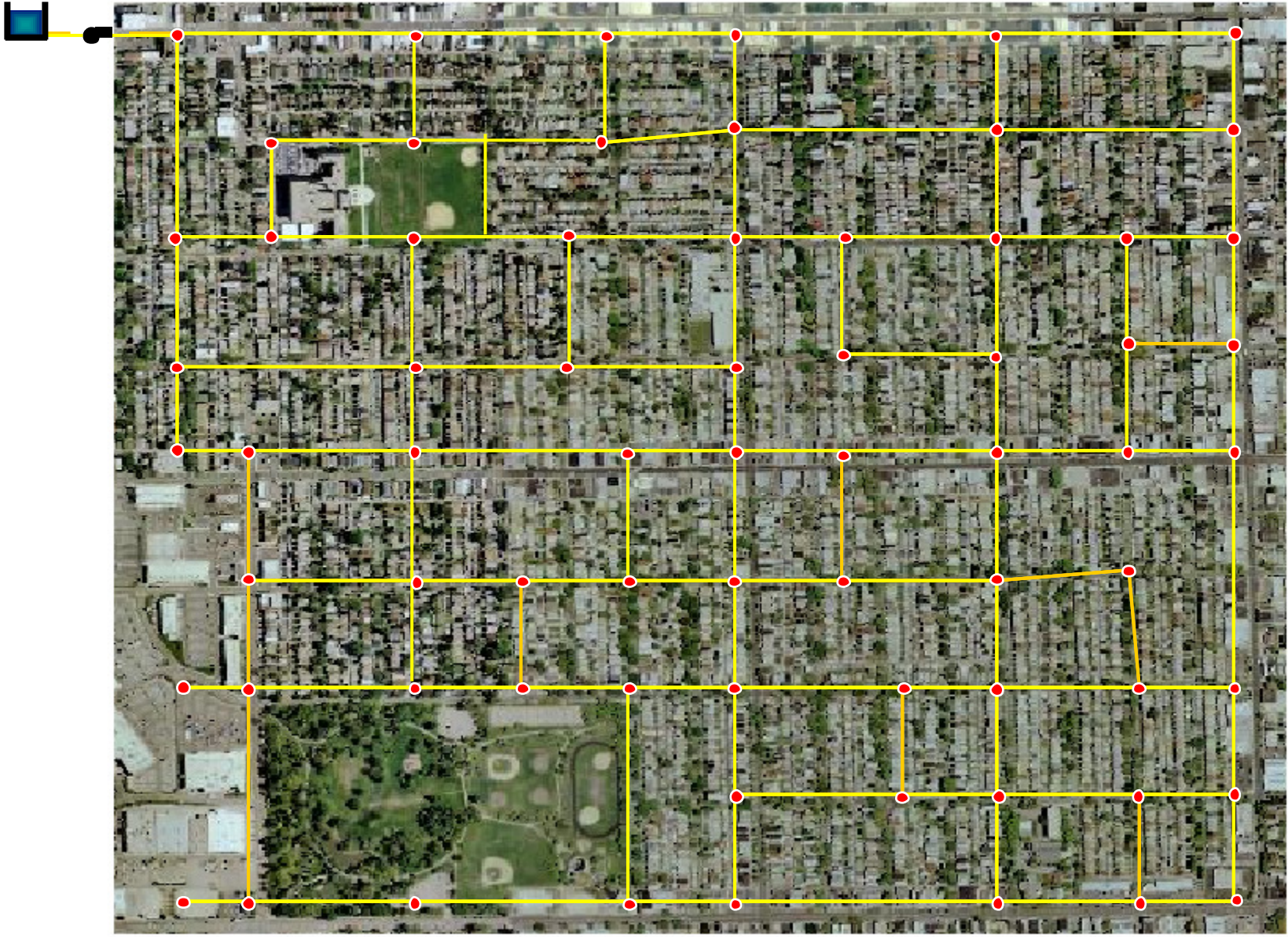
increasing existing
capacity / breakage rate

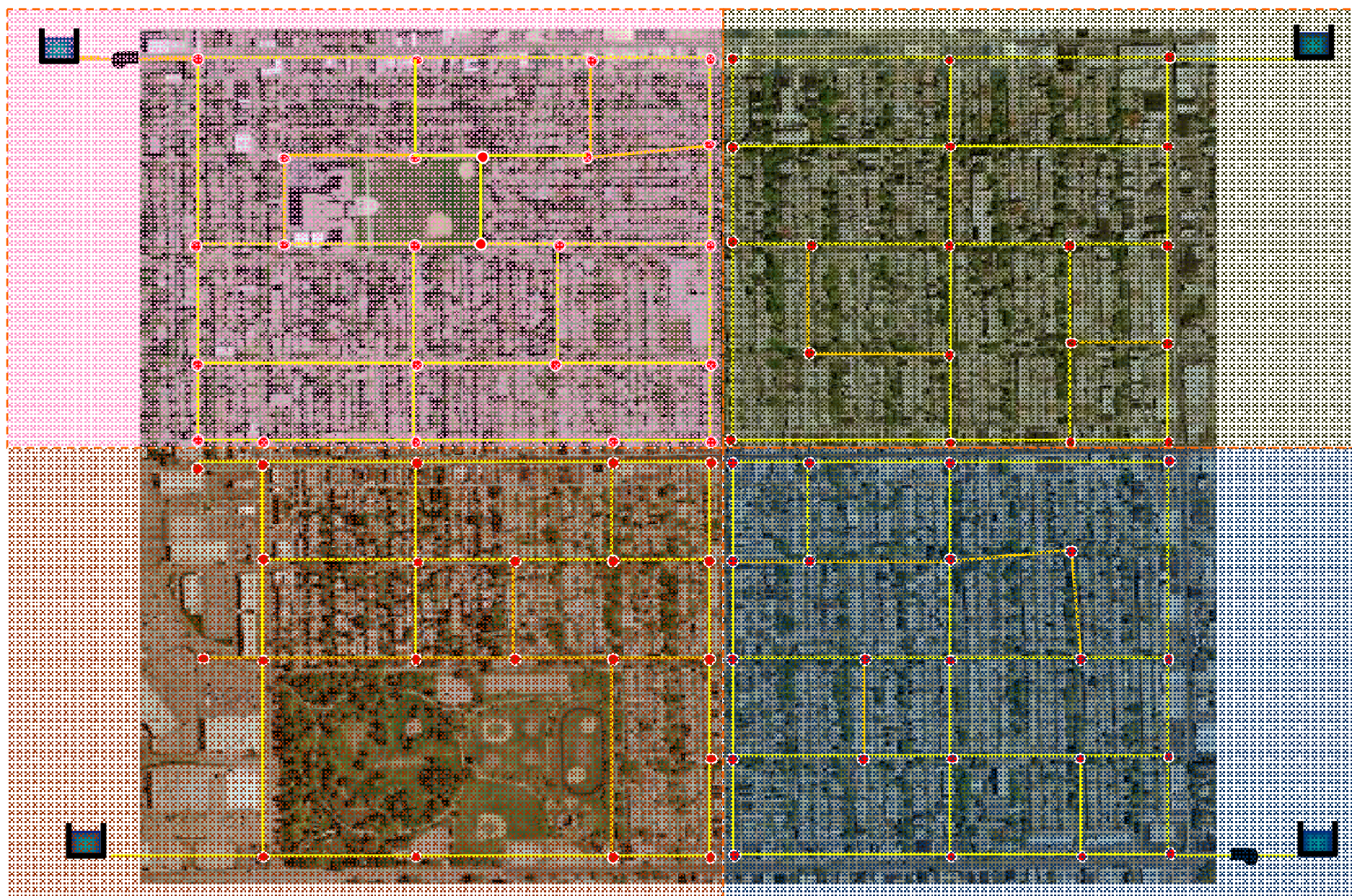


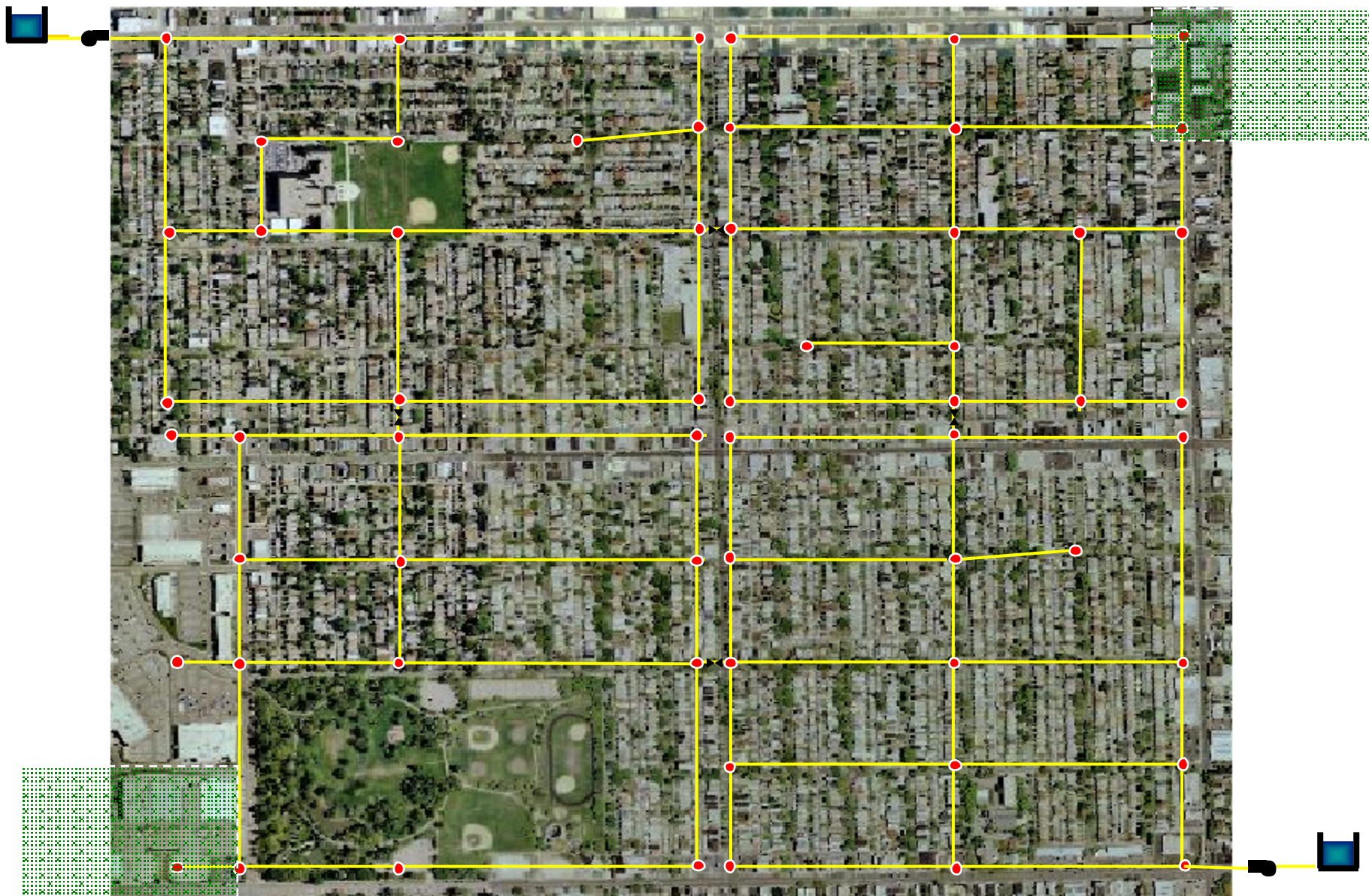
Decision Making in Uncertain World



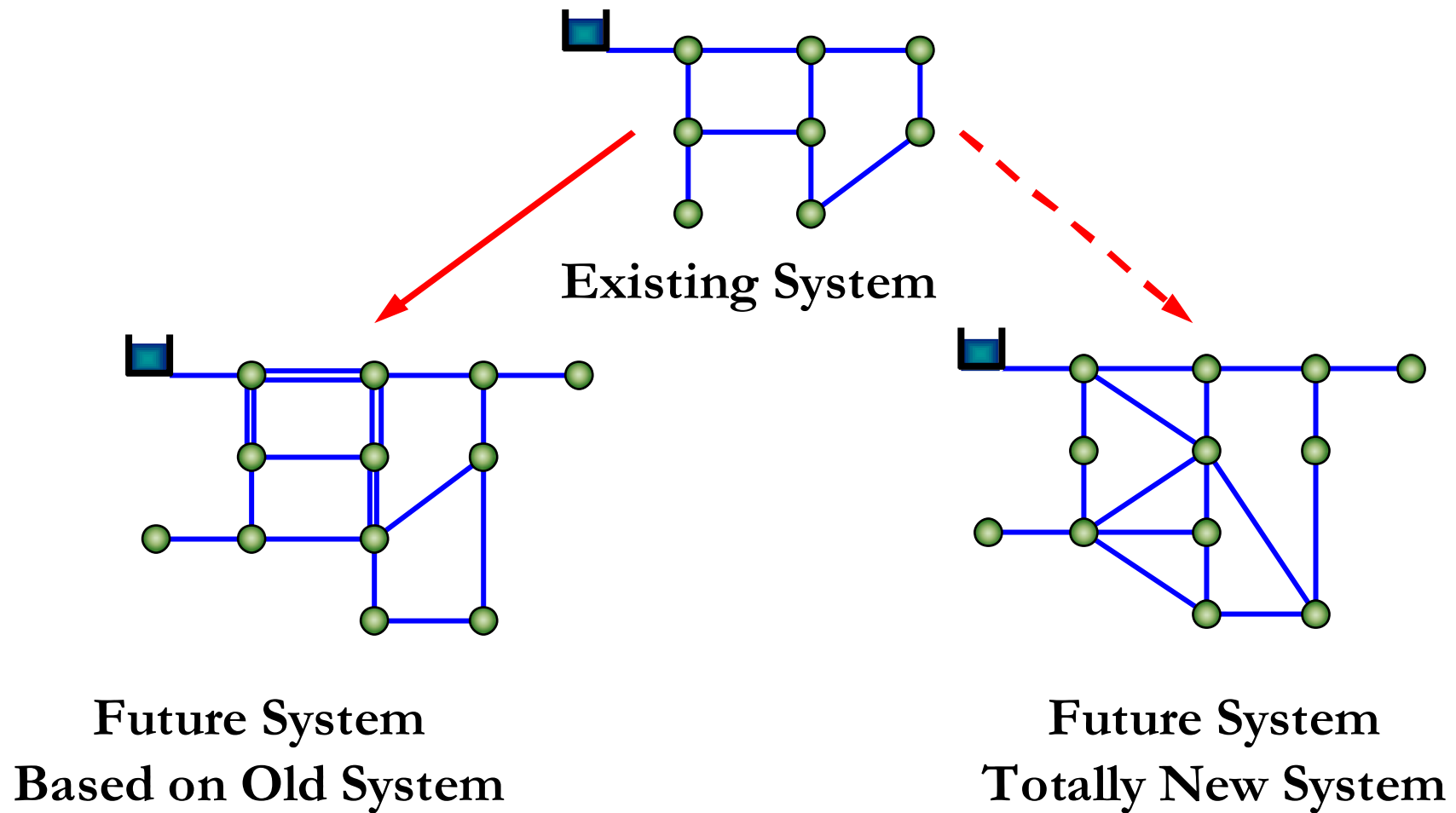
Source: Hadley Centre



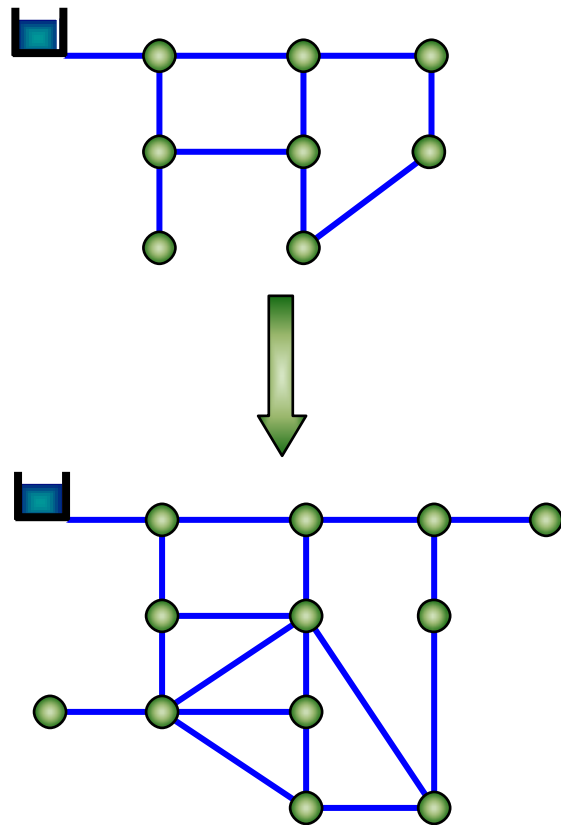




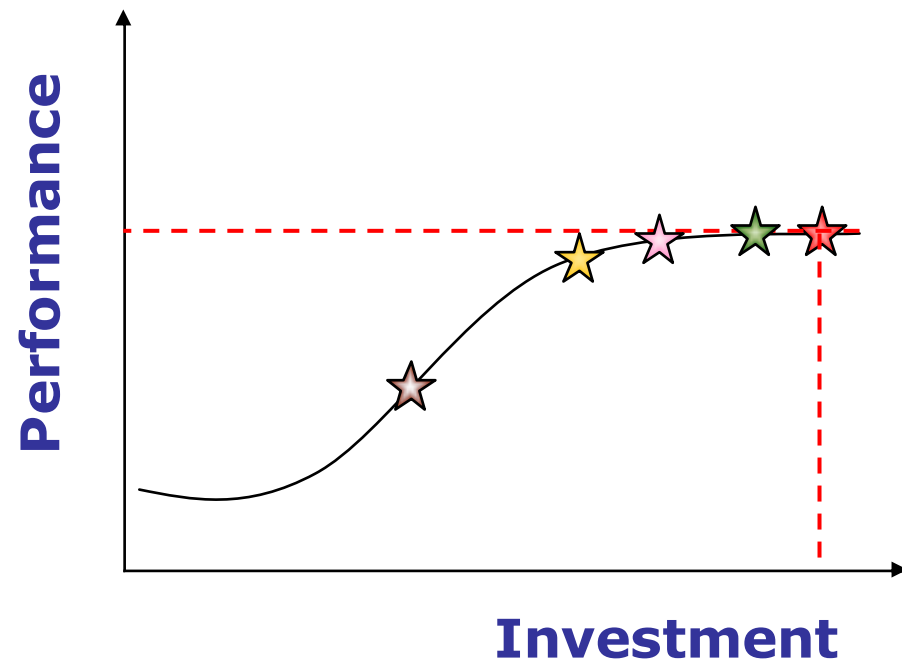
What about existing systems ?



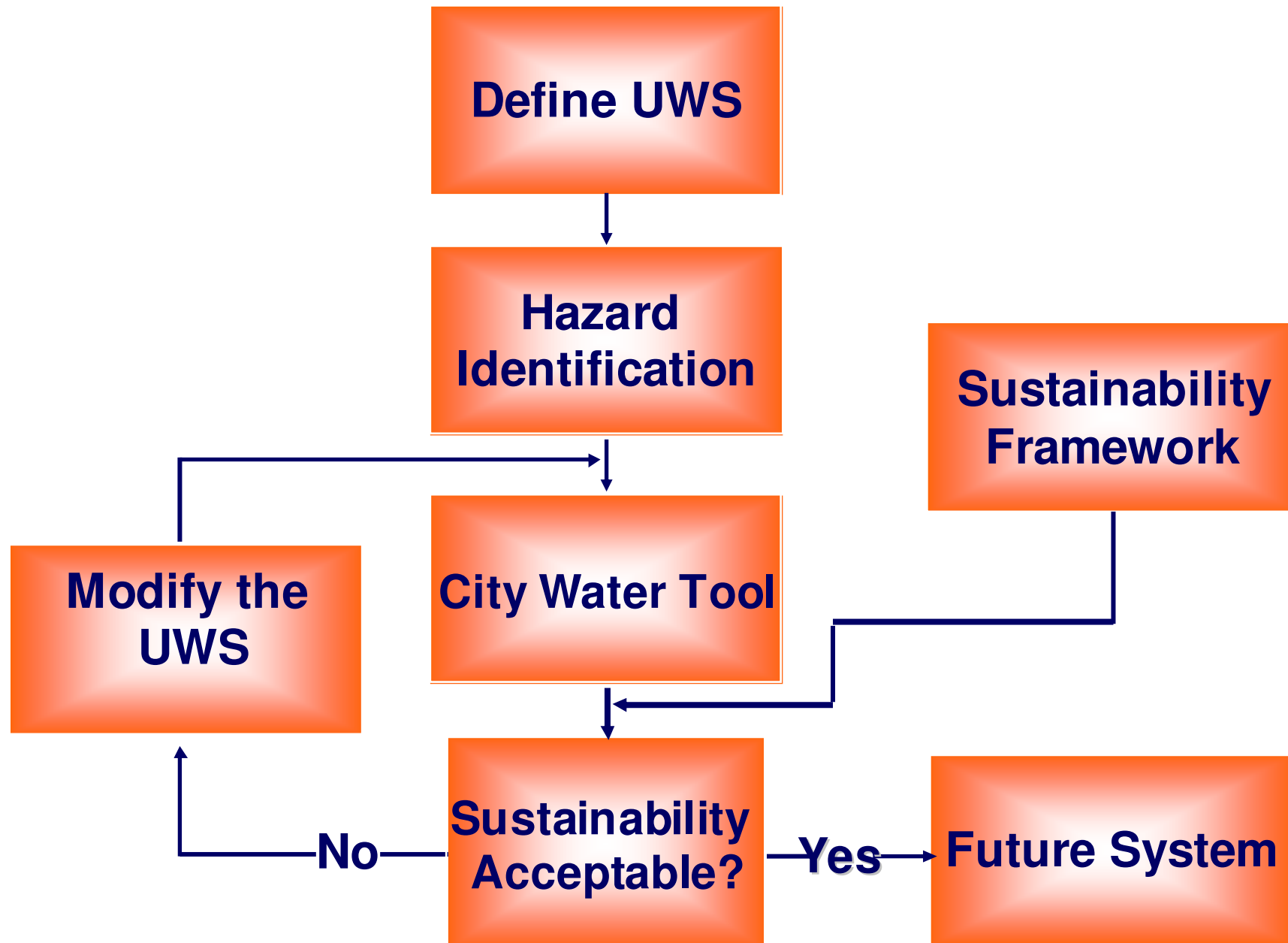
What about existing systems ?



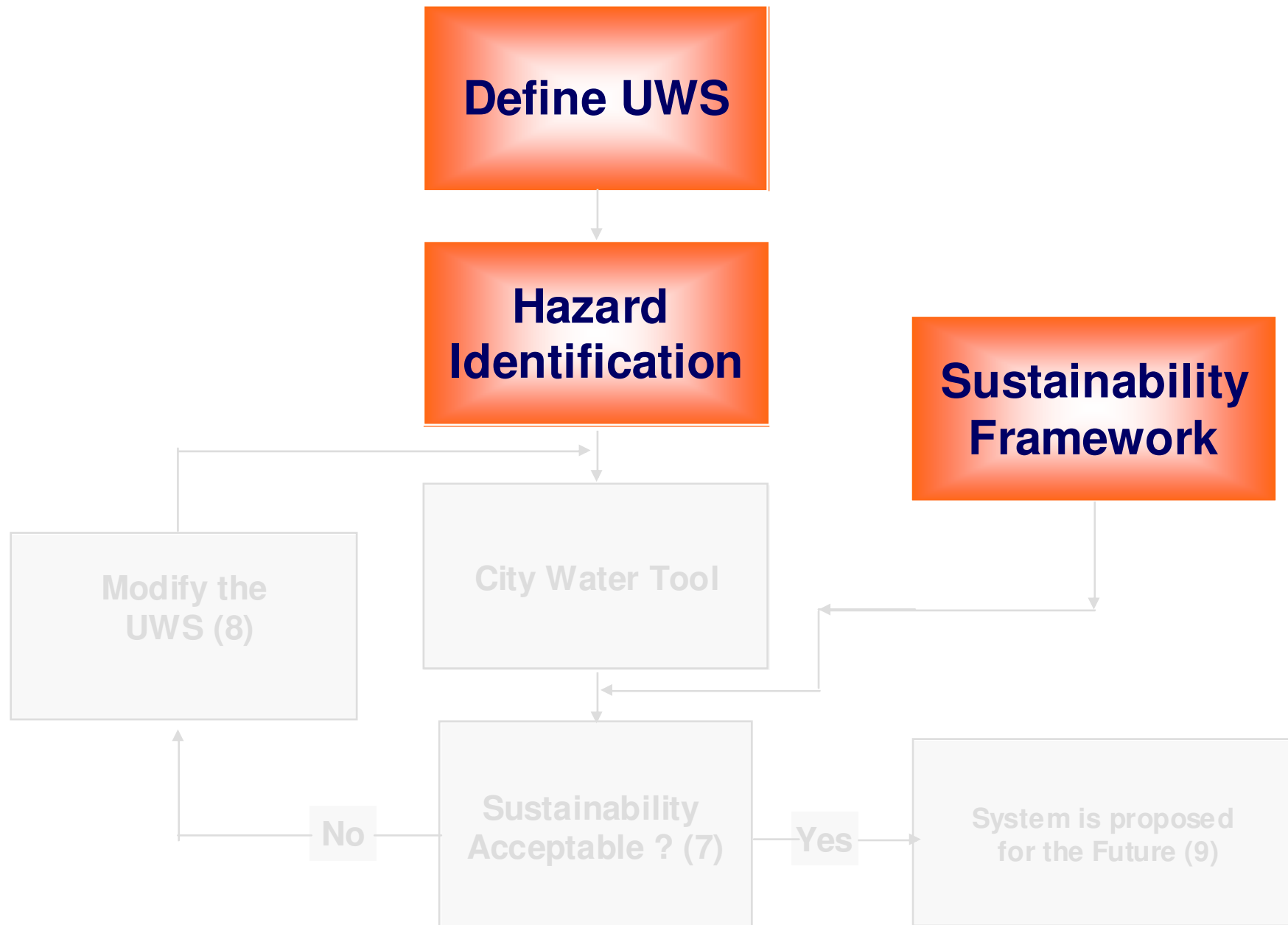
Future System
Totally New System



SWITCH Approach

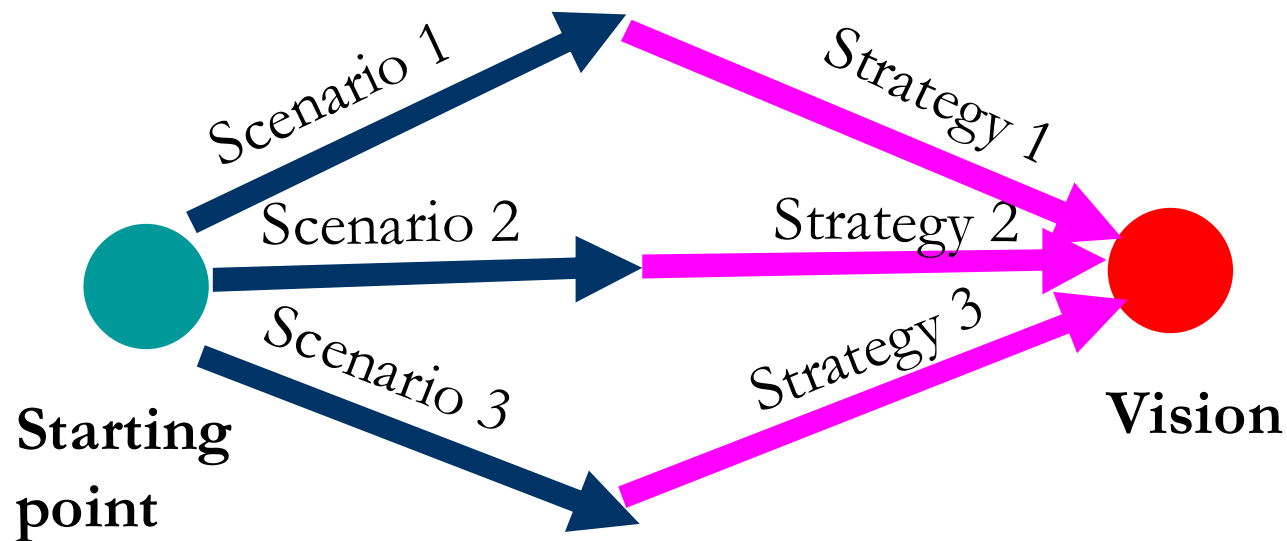


SWITCH Approach

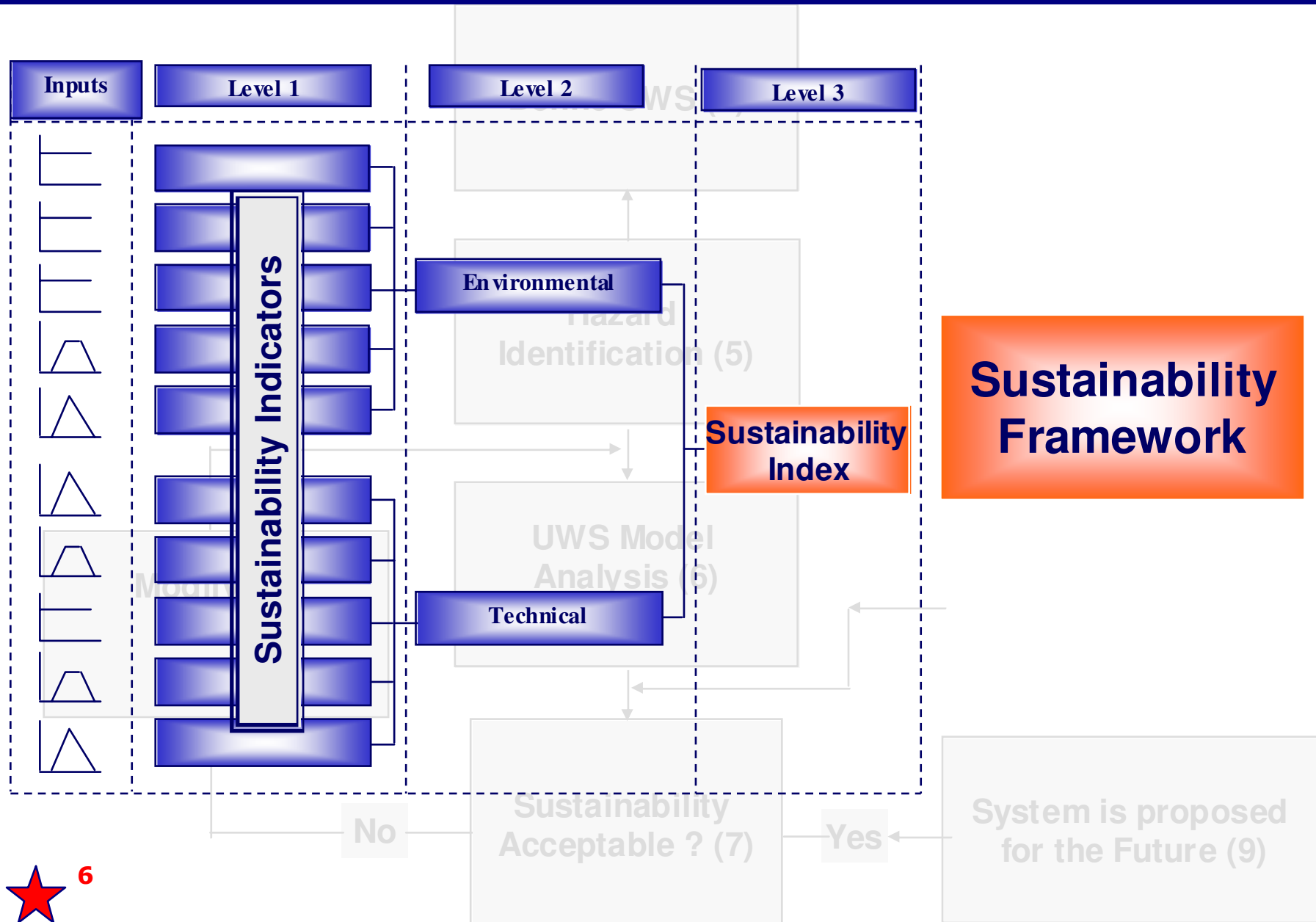


SWITCH Approach

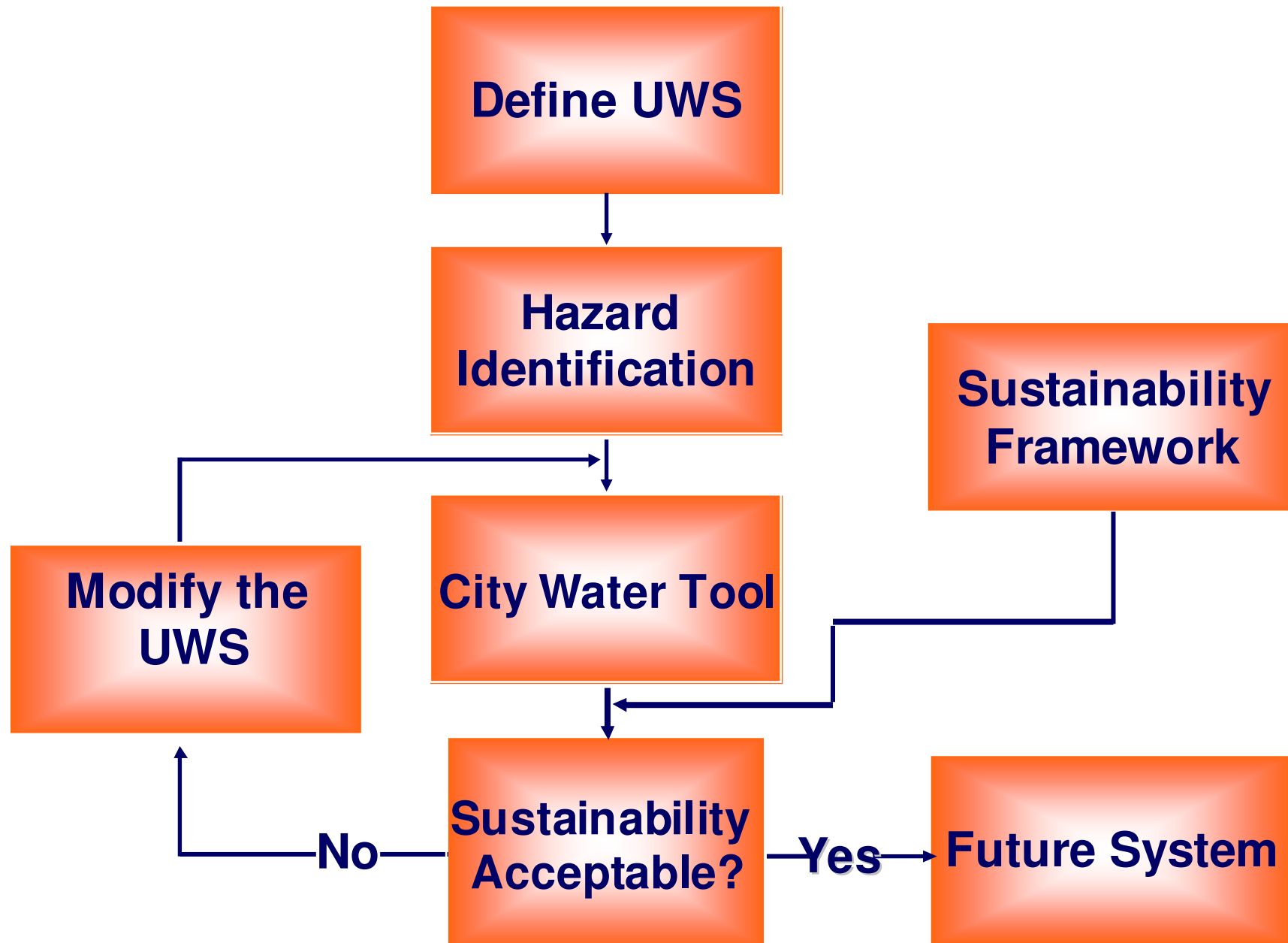
A SWITCH planning cycle to address global change pressures



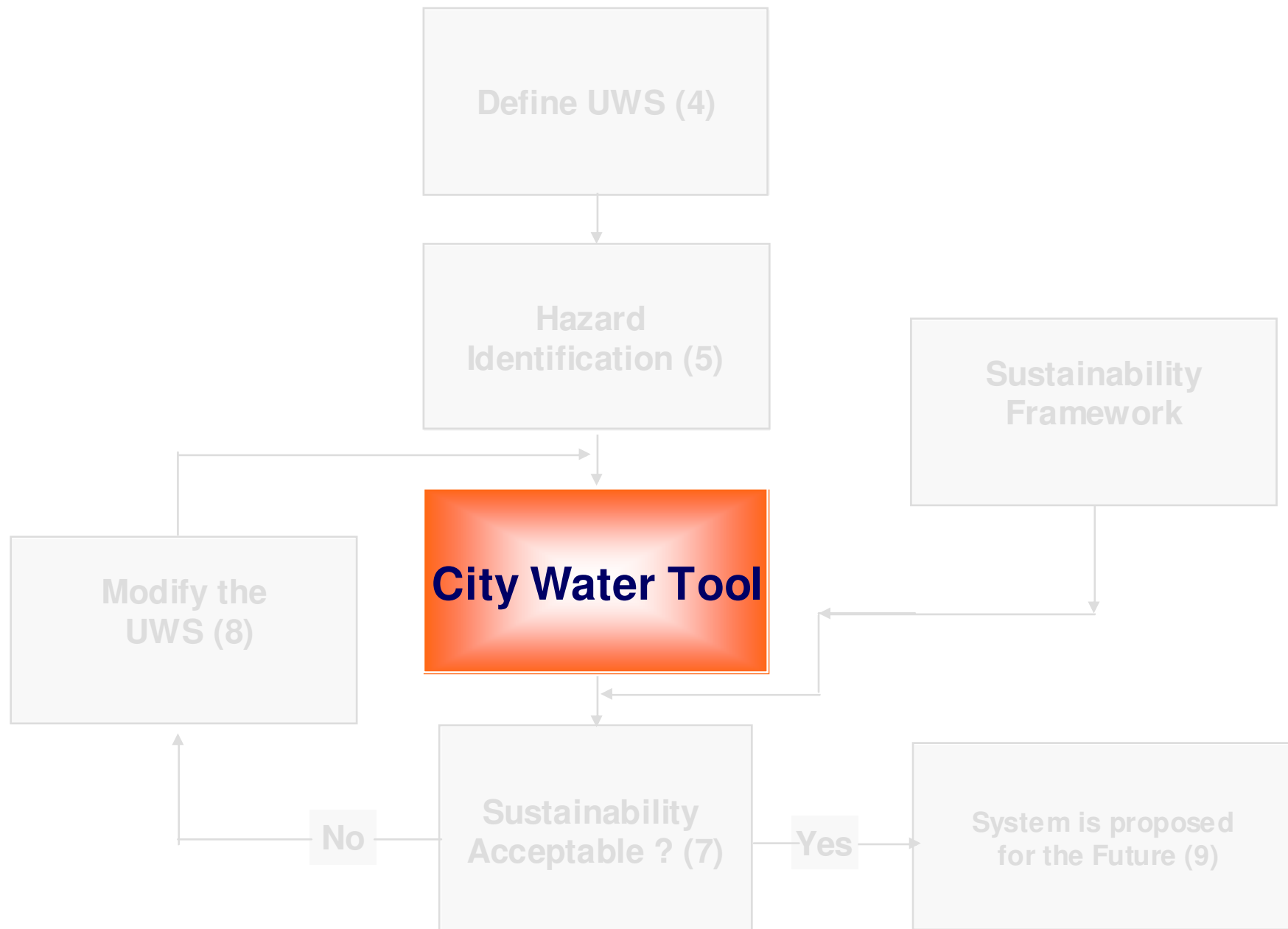
SWITCH Approach



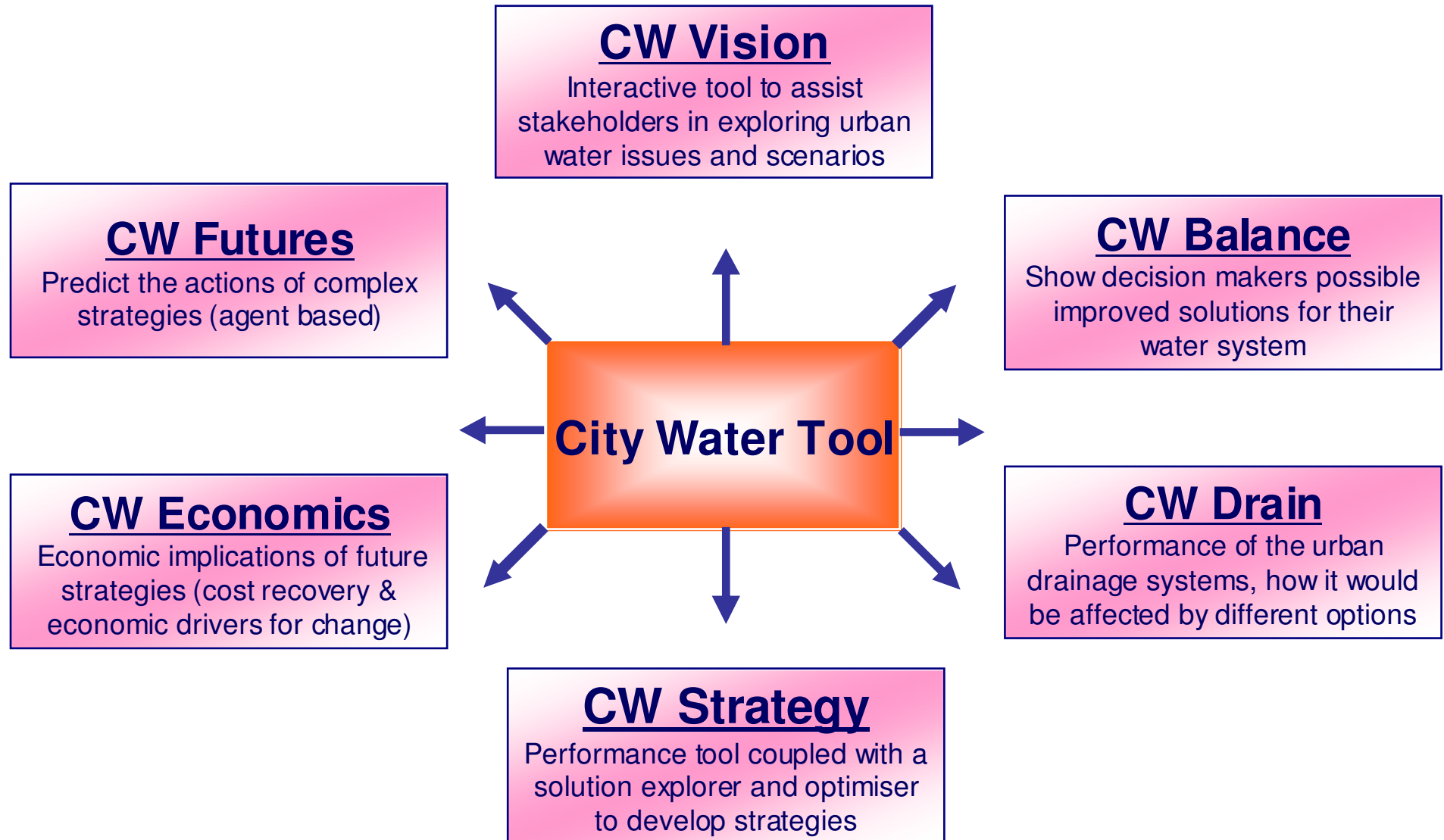
SWITCH Approach



SWITCH Approach



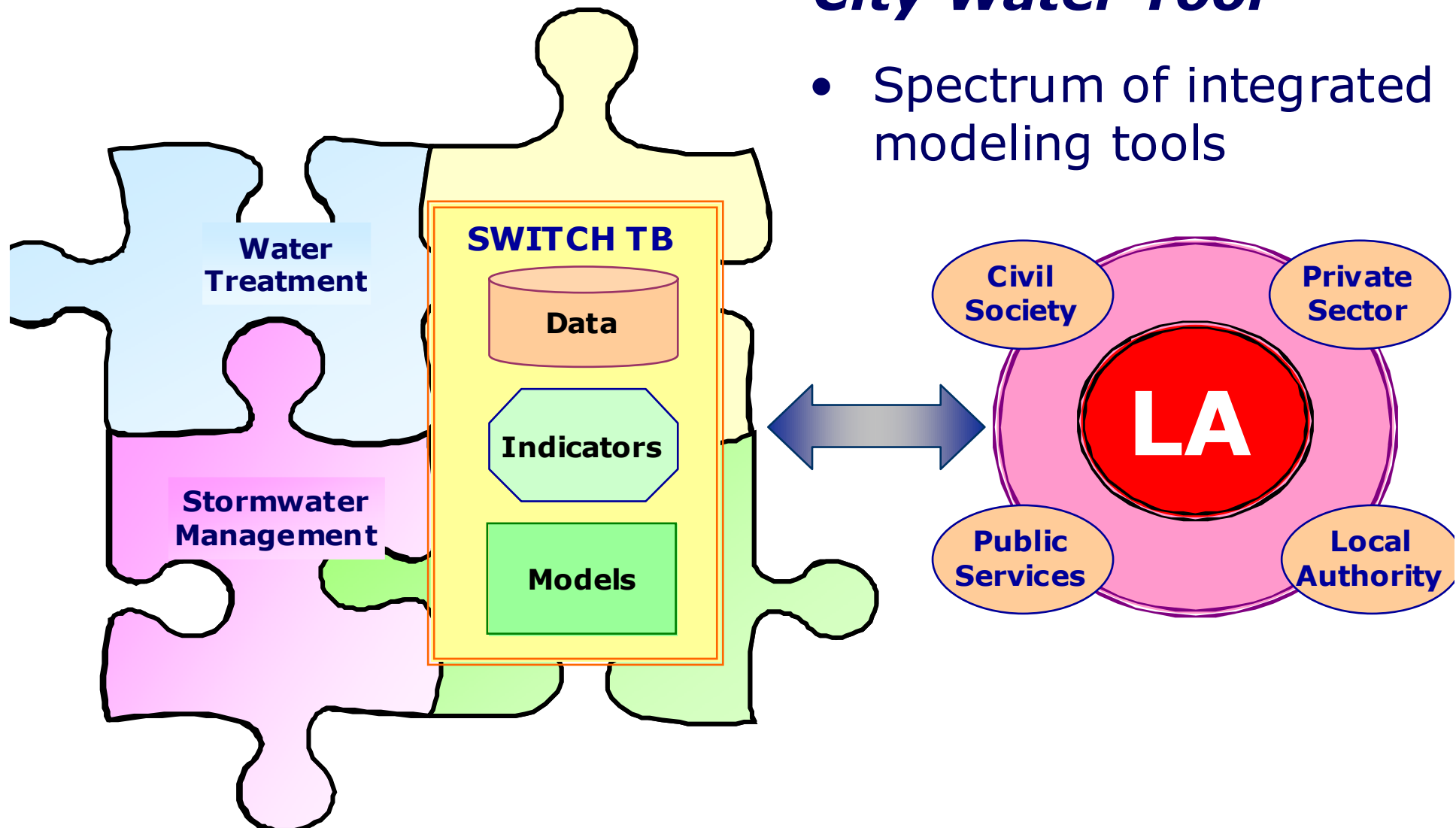
SWITCH Approach



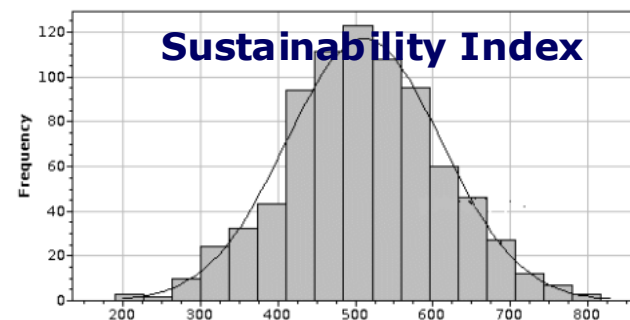
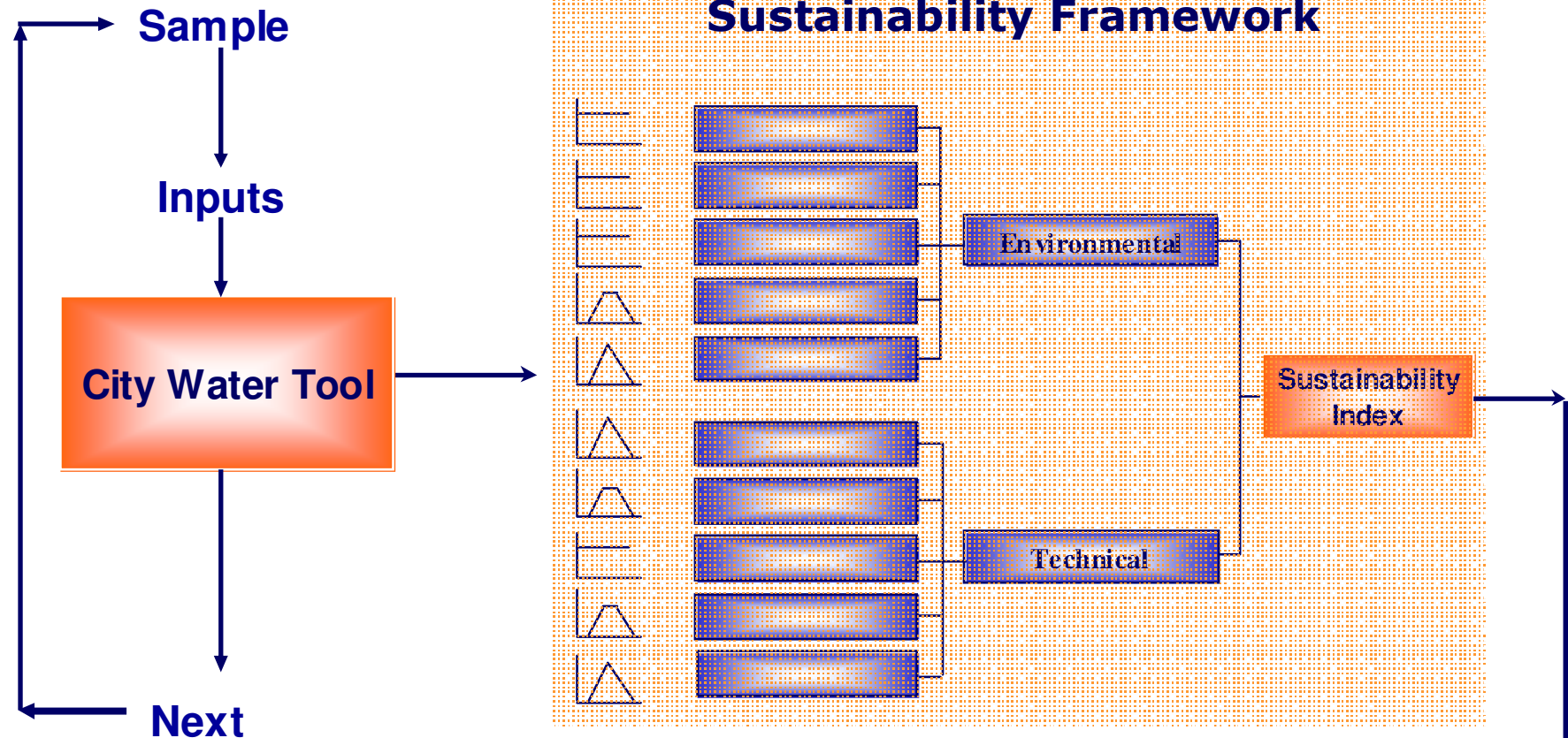
Interventions over urban water cycle

City Water Tool

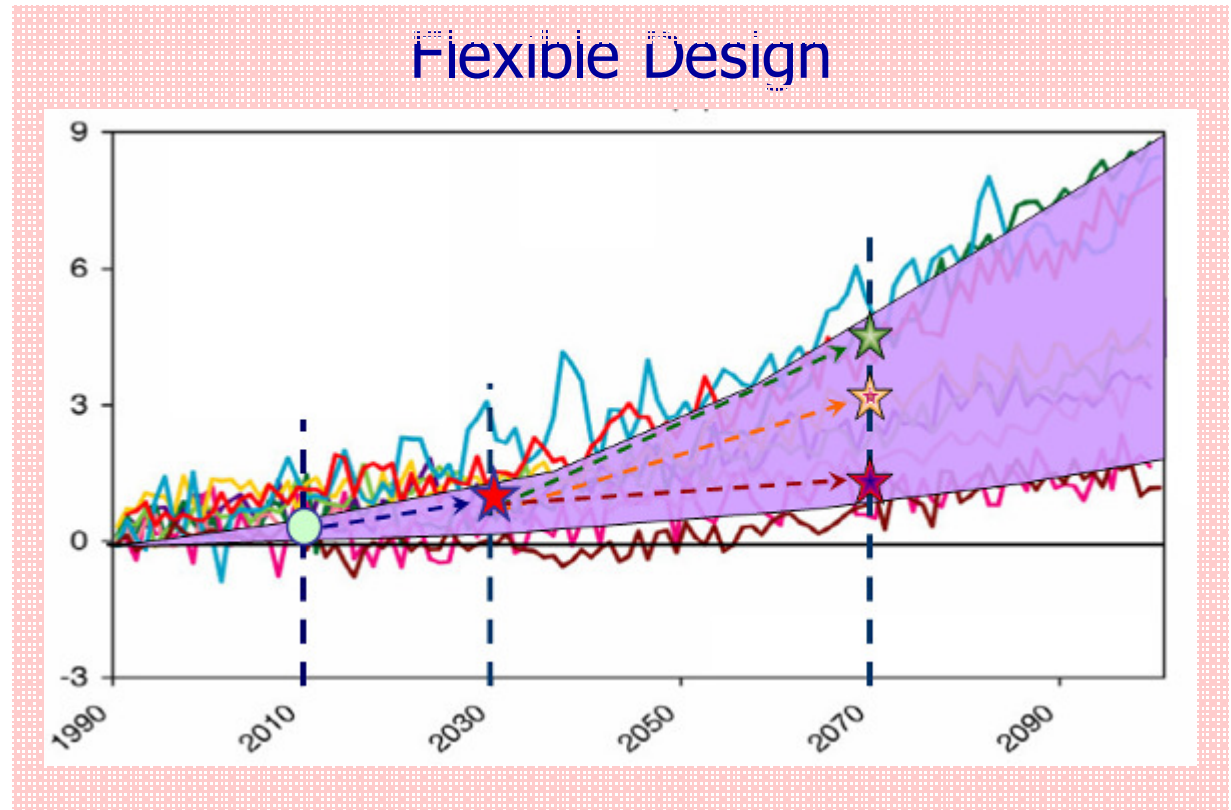
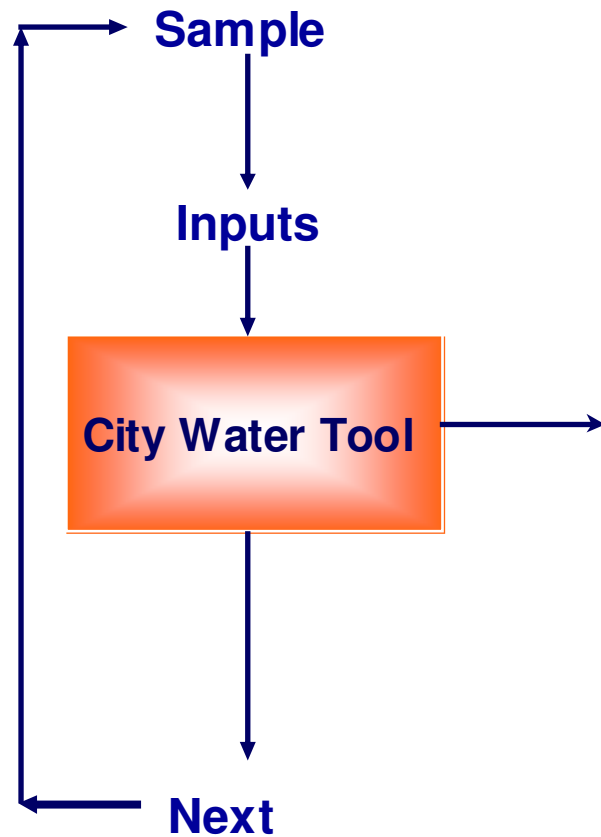
- Spectrum of integrated modeling tools



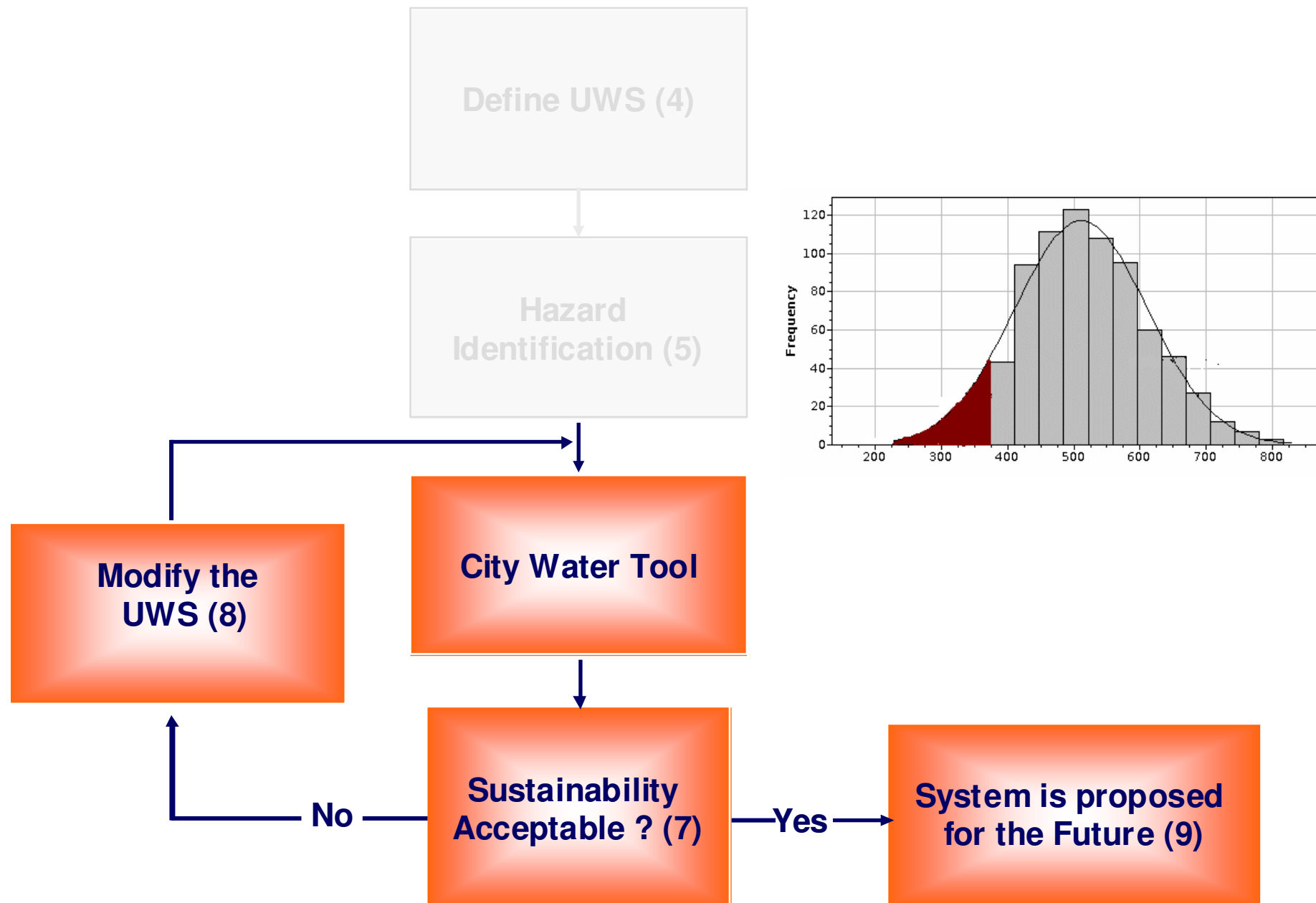
SWITCH Risk Assessment Framework



SWITCH Risk Assessment Framework



SWITCH Risk Assessment Framework



Good foundations for change

- Effective governance and financial management structures will be developed
- The LA's are the main vehicles for ensuring maximum and long lasting impact of SWITCH on the ground

'engines of uptake'



SWITCH - Themes



Storm Water Management



Urban water supply & use



Water use in sanitation and waste mgt.

Urban water environments and planning



**Capacity to innovate is essential
to survive in uncertain world**

Examples of activities

Rational Water Use:

- Demand Management
- Water saving technologies

Demonstrations: Zaragoza



Examples of activities

Sustainable Urban Drainage

Belo-Horizonte, Birmingham

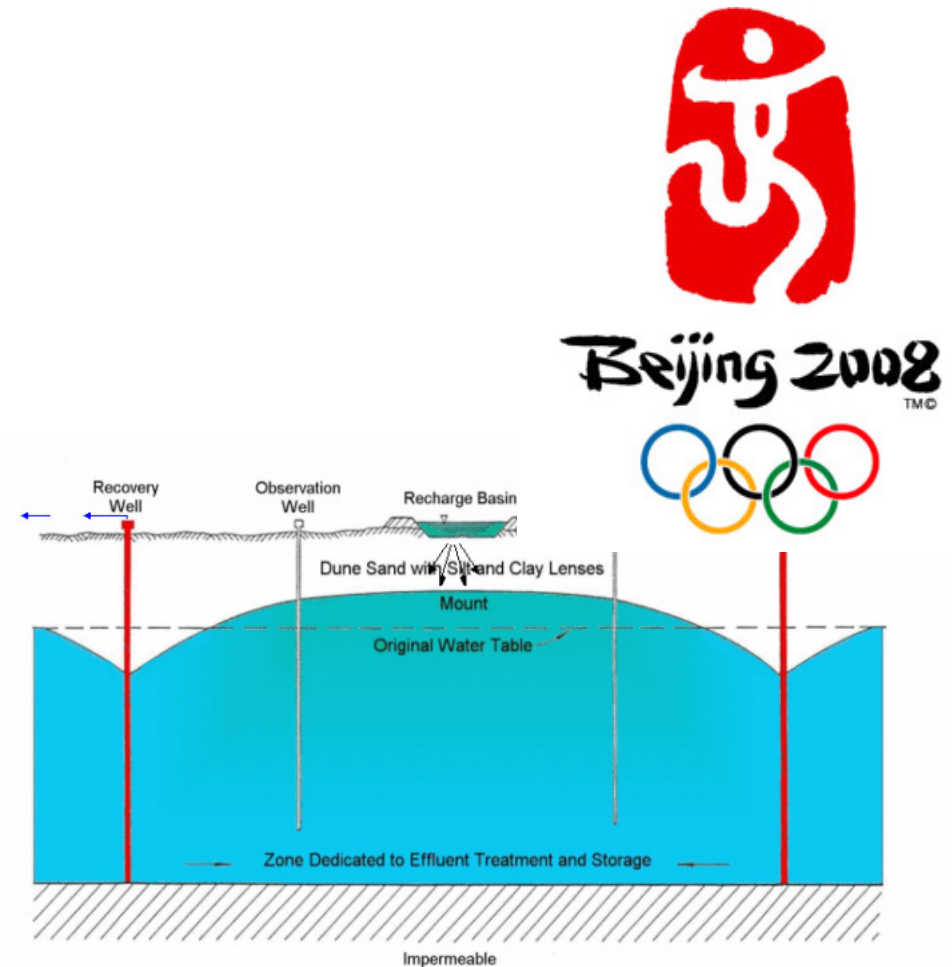


Examples of activities

Bank filtration and soil-aquifer treatment:

Demonstrations:

Tel-Aviv (WWT-reuse)





Hamburg



Beijing



Lodz

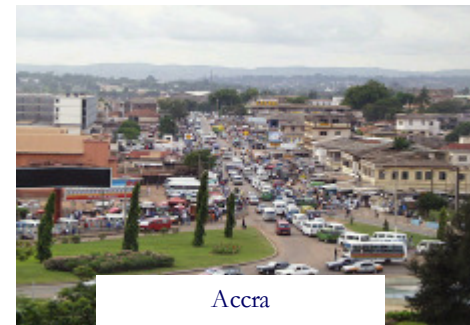
SWITCH: a tool where integrated solutions shape the city of the future



Zaragoza



Chong Qing



Accra



Birmingham



Alexandria



Belo Horizonte



Tel Aviv

Contents

- UWM - where are we ?
- Future Pressures
- New Thinking – SWITCH
- **Summary**

Summary

- We need to face the new challenges arising from the unprecedented changes taking place at a global scale.
- The time has come to think fresh - we have to find new ways of catering for more people, more needs with the same quantity of water.
- This complicated challenge calls for radically different thinking – a real paradigm shift in urban water management
- Multi-stakeholder partnerships is the key



UNIVERSITY OF
BIRMINGHAM

UNESCO-IHE
Institute for Water Education



Thank You

Kalanithy Vairavamoorthy

Scientific Director of SWITCH-IP (EU-FP6)

k.vairavamoorthy@bham.ac.uk