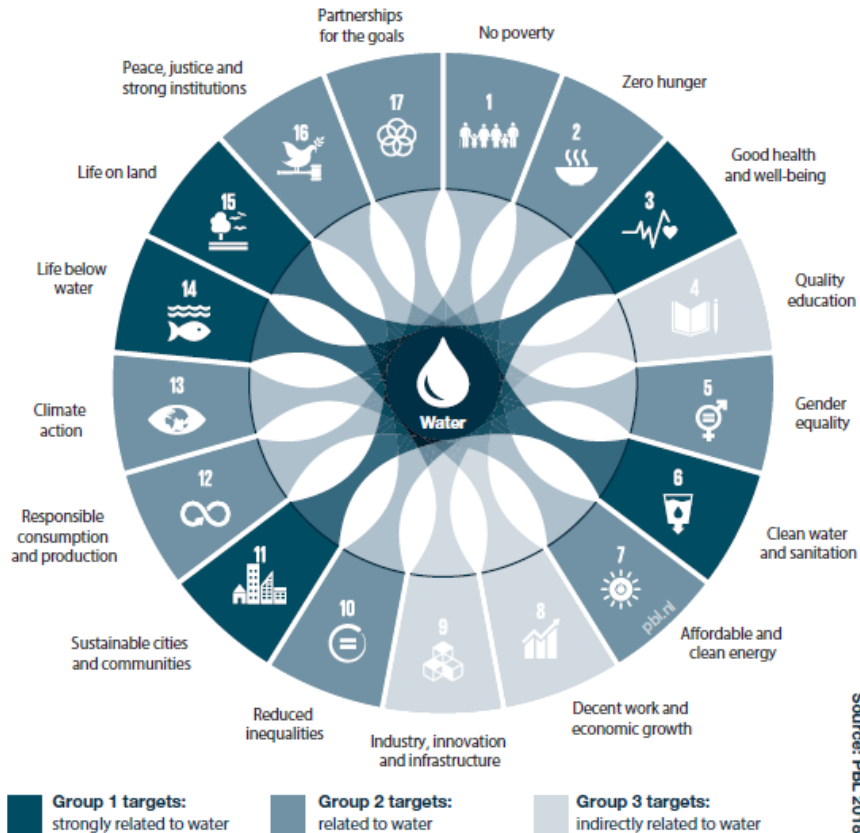


# Improving City Resilience through a Design with Water Approach



# Why? A common currency across the SDGs

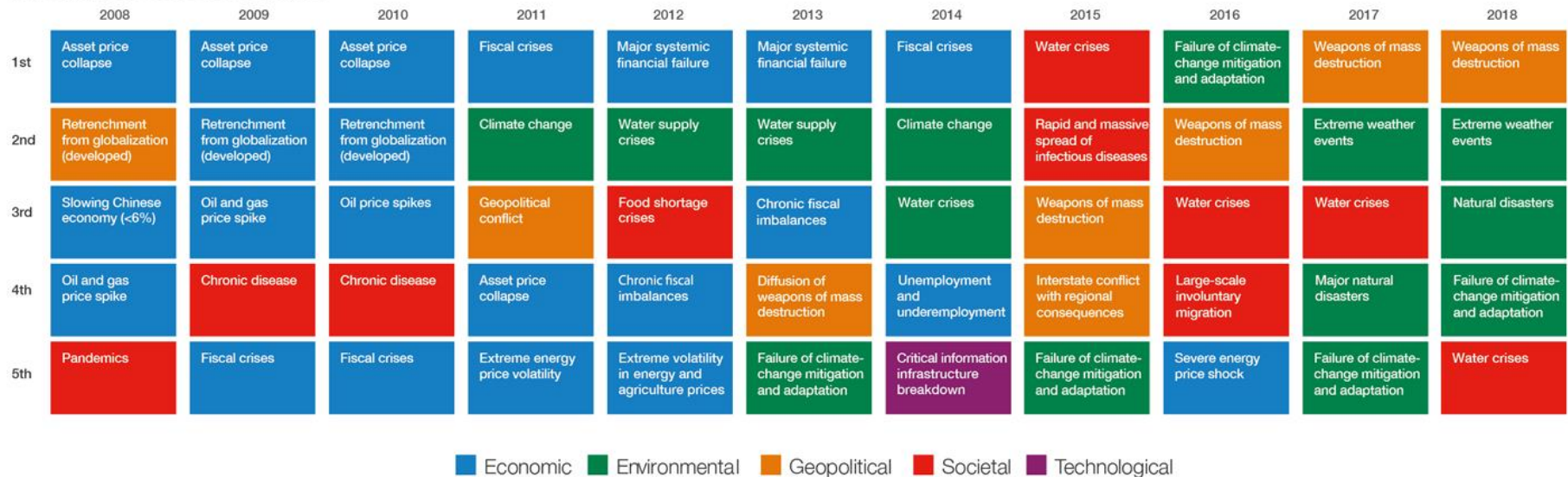


HLPW Outcome Report | 1



## Why? Rising up the agenda

Top 5 Global Risks in Terms of Impact



## Why? Miami shocks and stresses





## Why? Manila shocks and stresses





## Why? Chicago .. The opportunity





## What? Leeds, UK





## What? Hunters Point, New York





## What? GI Retrofit, New York

### NYC Resiliency **Green** Infrastructure





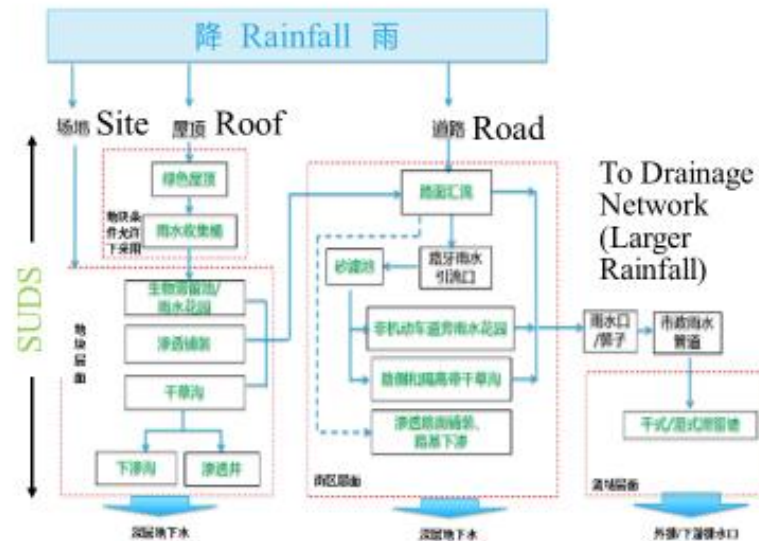
# City Masterplanning, Beijing

## Yongding River New Ecological Cultural Zone, Beijing sustainable water master planning



- Location: Fengtai District, Beijing
- Site area: 156.4 ha
- Very asymmetrical annual rainfall distribution: 80% of rainfall in June, July and August

### Sponge City Strategy



Retain on site or Infiltrate to Ground  
(Rainfall < 2 year return period)

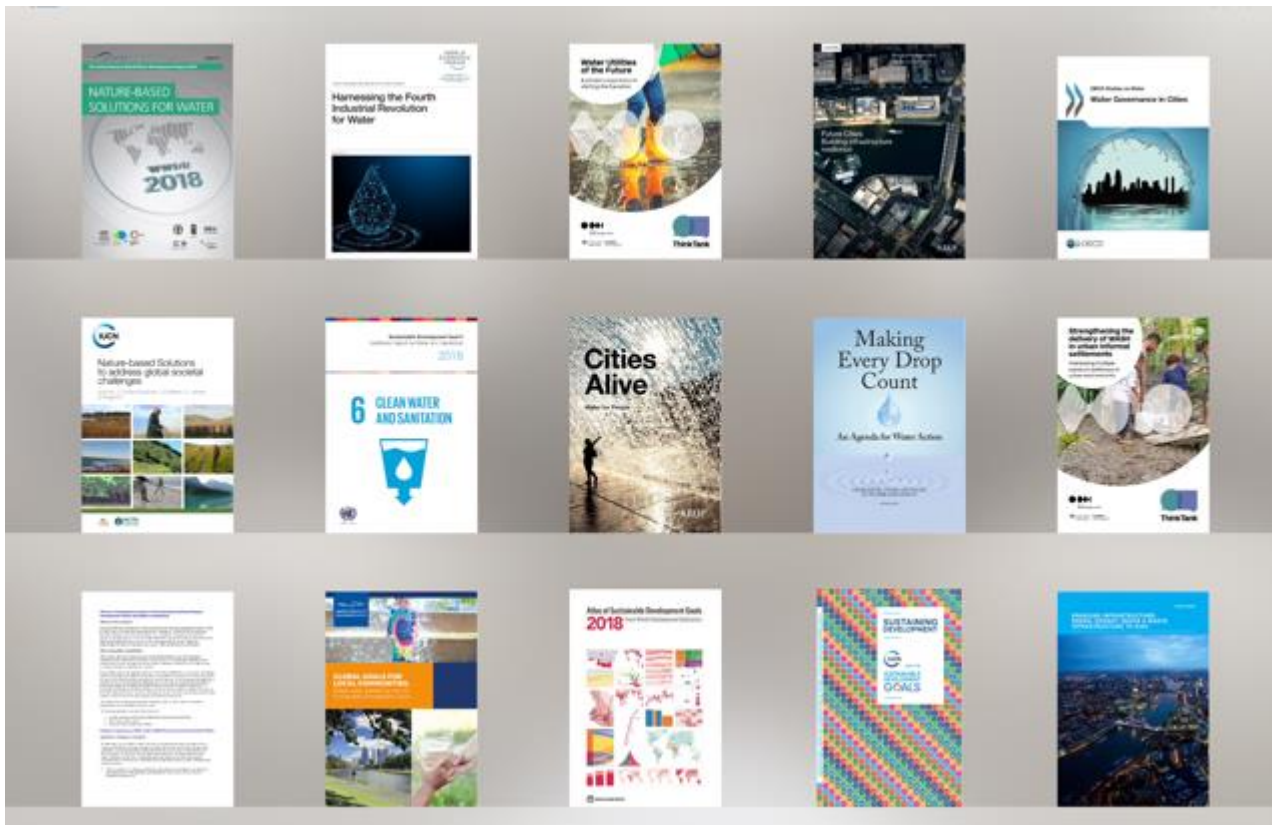


# Lake District Masterplan, Singapore

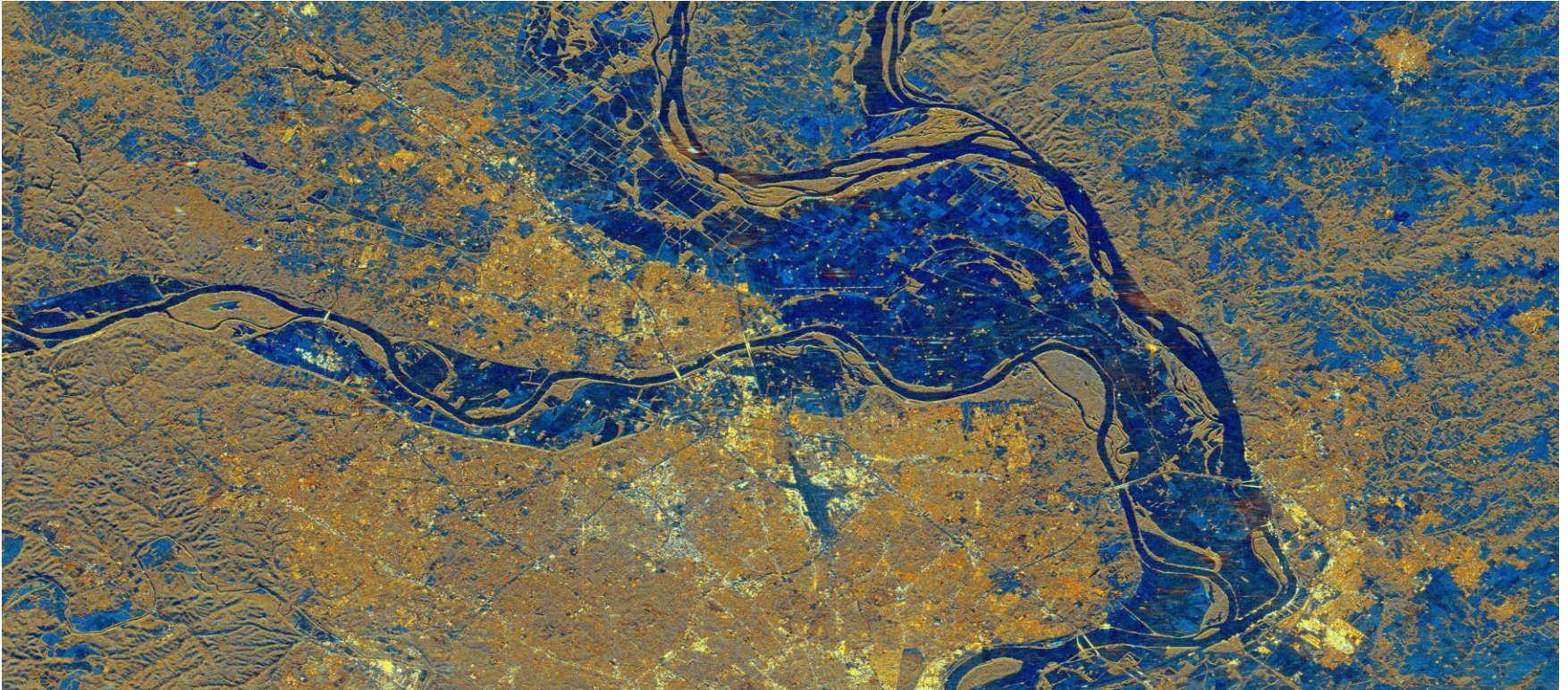




# How? No lack of guidance



## Data and Technology



### Natural flood management with machine learning

Arup, NVIDIA and DigitalGlobe explored machine learning potential to evaluate the performance of natural flood management schemes. We have successfully developed multiple deep learning based systems that provide map data on land use and object identification at a higher resolution than other datasets that are currently available.



## Data and Technology

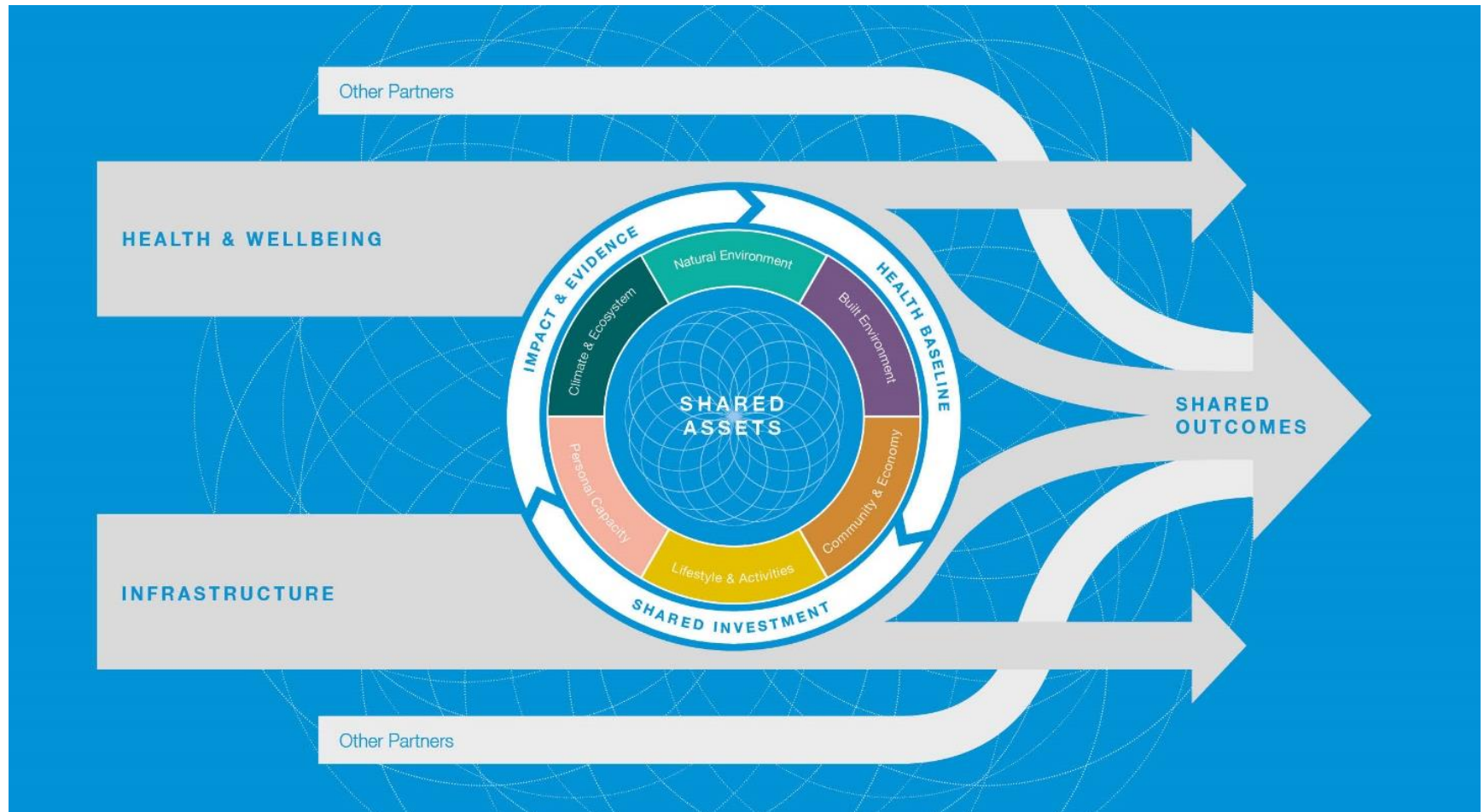


## Value





# Value



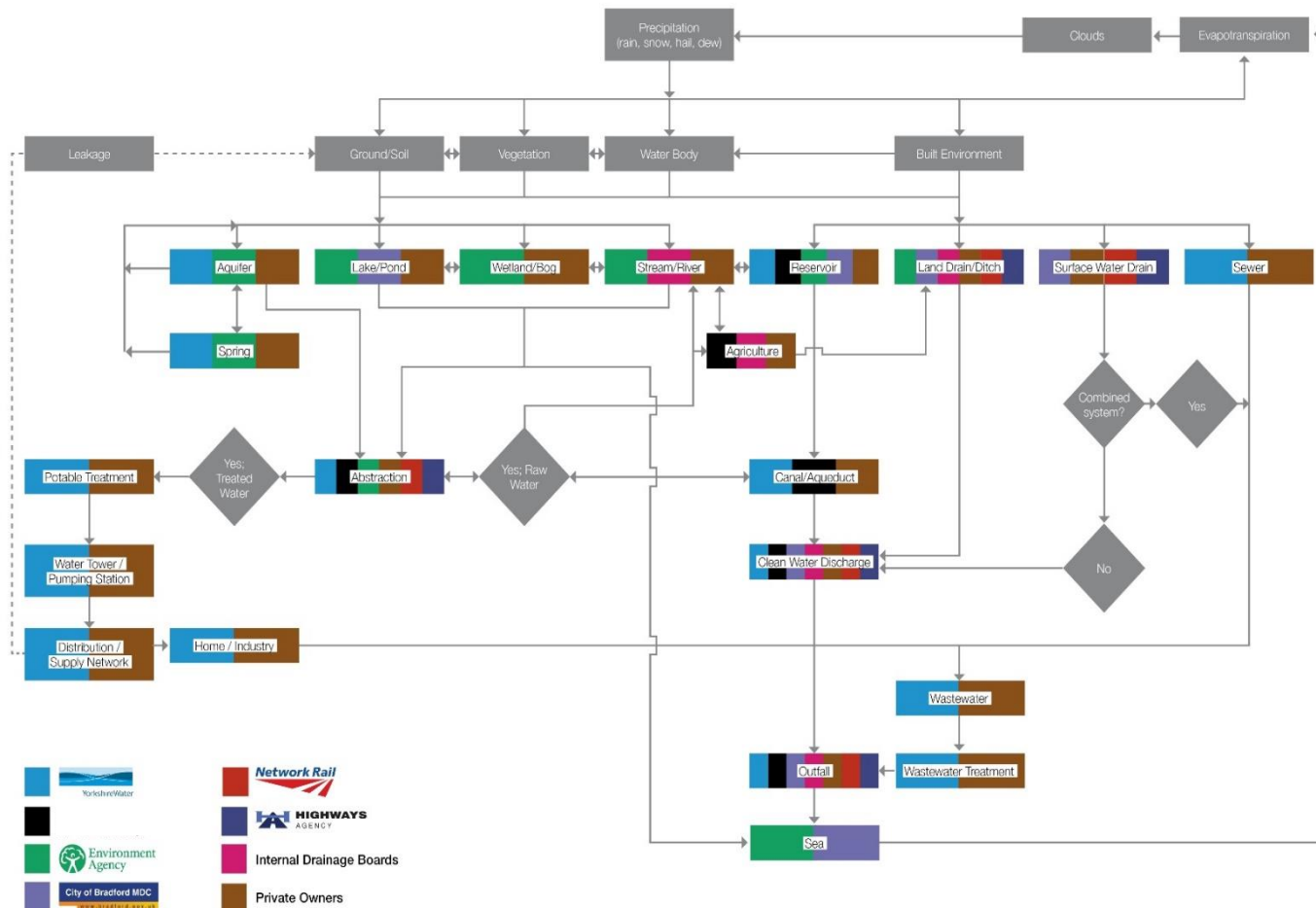
## Basin Sensitive

Water is fundamental to all urban systems, a shared vision across the river basin.





# Governance across the water cycle



# City Water Resilience Framework

THE RESILIENCE SHIFT THE ROCKEFELLER FOUNDATION ARUP

## Urban Resilience

*"City resilience describes the capacity of cities to function, so that the people living and working in cities – particularly the poor and vulnerable – survive and thrive no matter what stresses or shocks they encounter"*

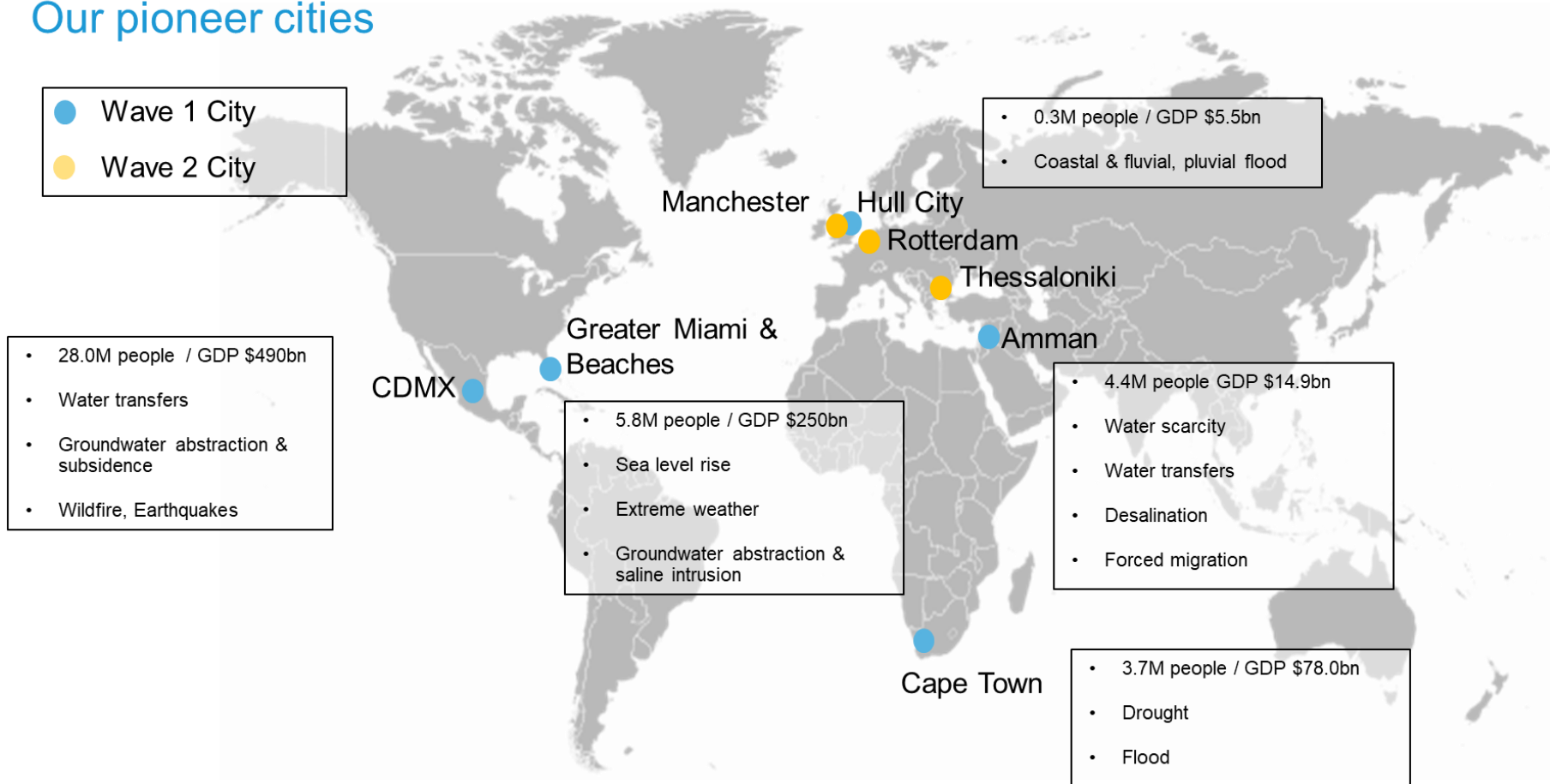
(CRI, 2014)





# CWRF Pilot

## Our pioneer cities

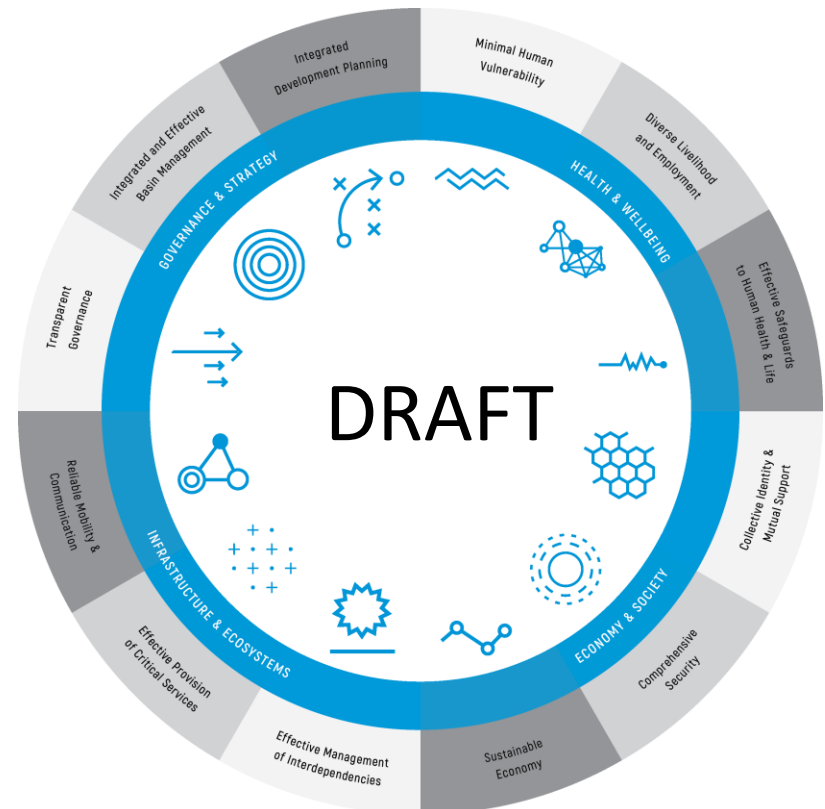


# CWRF Draft Framework

The value of urban water resilience  
*Water through an urban resilience lens*

## Creating opportunities

- Realising the 2030 Agenda for the Sustainable Development Goals
- Attract investors: water risk is increasingly a key consideration in business decisions
- Robust decision making that properly accounts for water risk
- Improve water governance structures with clearly defined roles and responsibilities
- Reduce the risk of cascading failure





# Conclusions

## Cities Alive: Water for People

Five themes for implementing sustainable water management



Putting People First



Basin Sensitive Cities



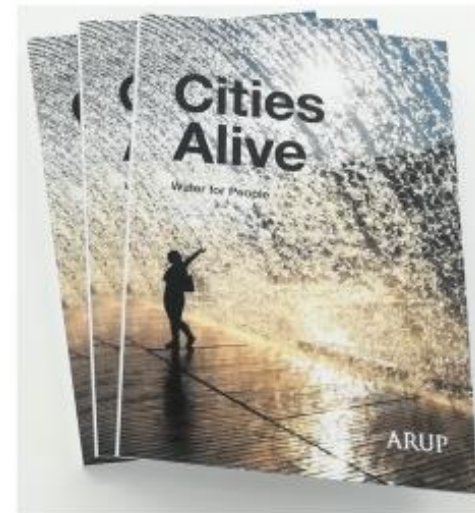
Integrated Design



City Regeneration



Transcending Barriers



ARUP

Thank you

