

Cities, Water, Resilience and the Circular Economy

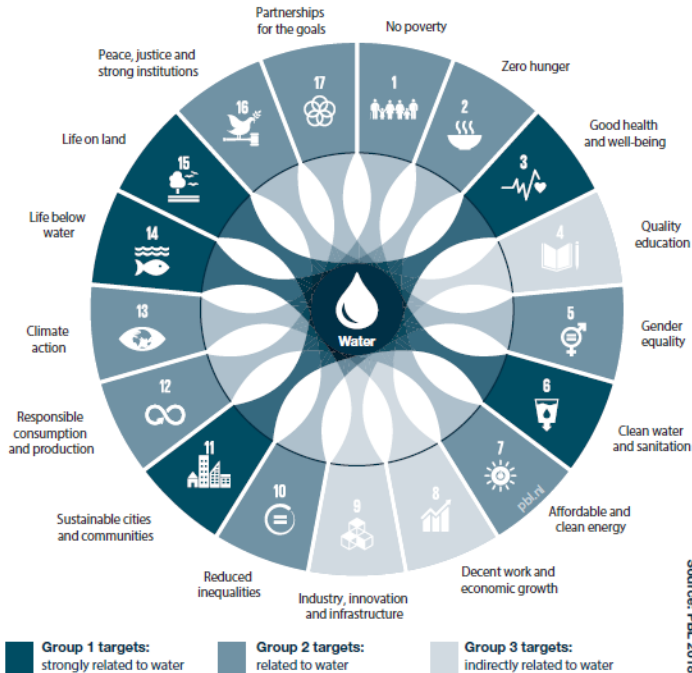
Newcastle, March 2019

Justin Abbott



A common currency across the SDGs

2



“Progress on SDG6 will be impossible without progress on the other goals and vice versa”

A vision for the circular built environment

3

How will a built environment operating on circular principles actually differ to the one we have today? Aims to translate the principles developed around CE and products and services into the built environment



*... through an
urban water lens*



A vision for a resilient urban water environment? ⁴



Support human-wellbeing and natural systems; *human centred design, community engagement, co-creation*

Cities Alive: Water for People

Five themes for implementing sustainable water management



Putting People First



Basin Sensitive Cities



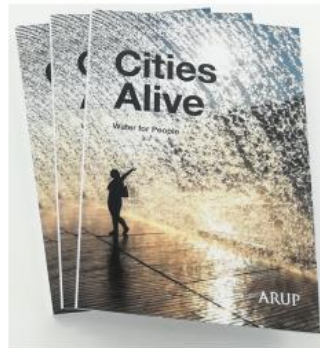
Integrated Design



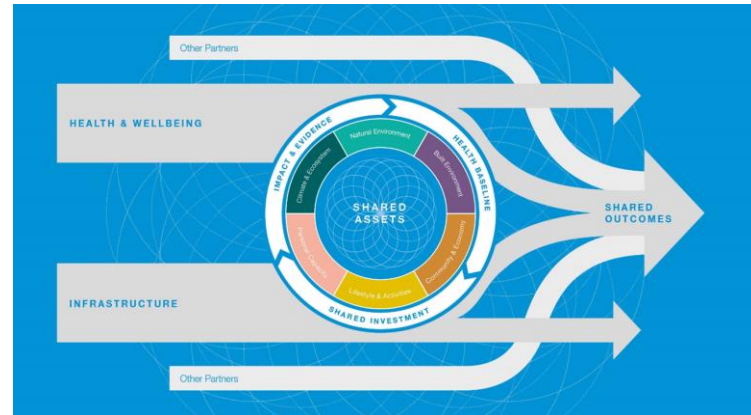
City Regeneration



Transcending Barriers



Infrastructure: Shared Outcomes for Health



ARUP

A vision for a resilient urban water environment? ⁵



Guided by systems thinking; system led approach, systems of systems



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)



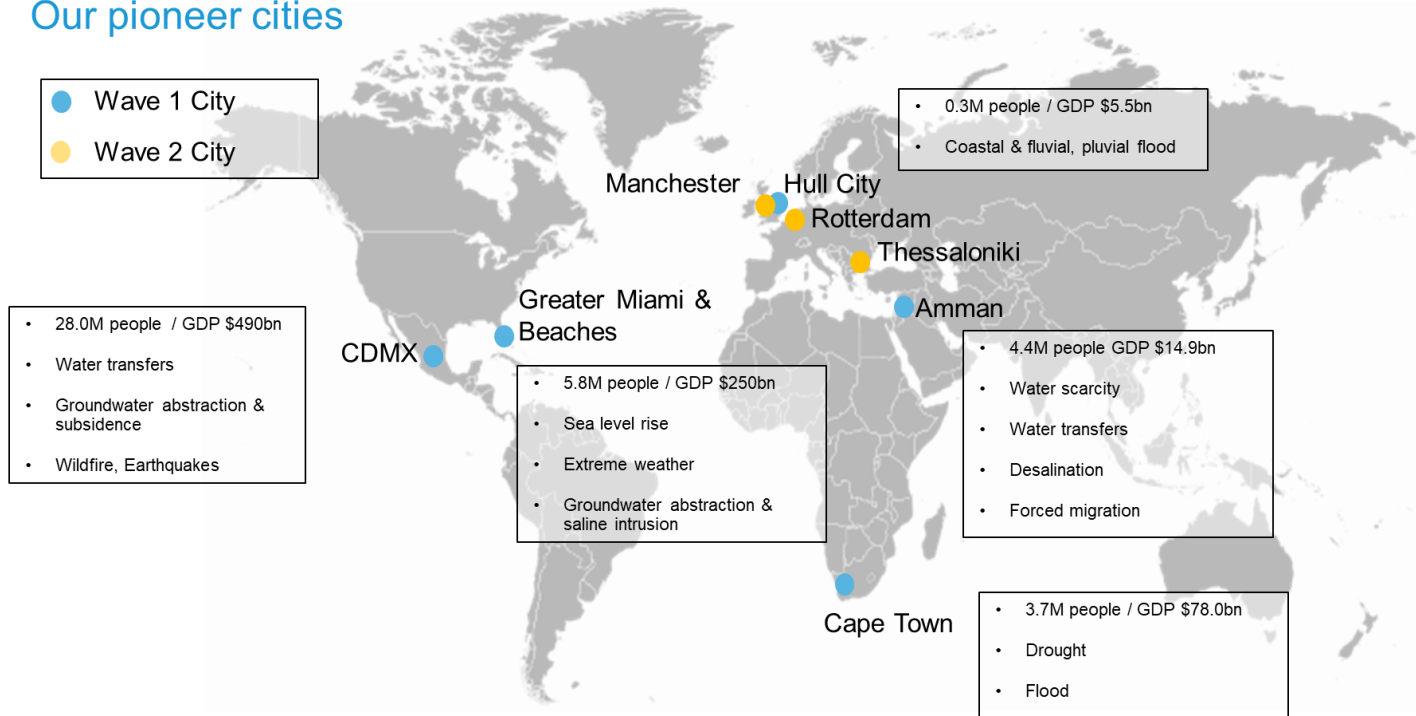
“Water is a driver for solving some of the problems within these complex urban systems”

A vision for a resilient urban water environment? ⁶



Guided by systems thinking

Our pioneer cities

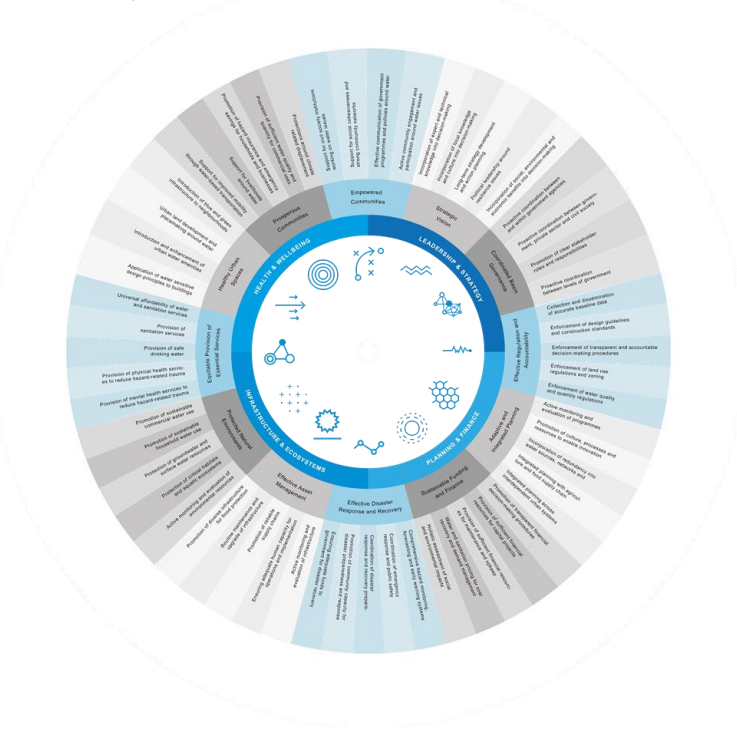


A vision for a resilient urban water environment? ⁷



Guided by systems thinking

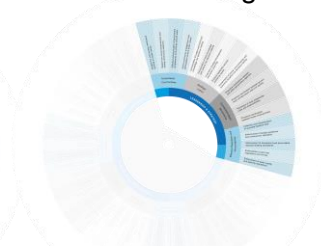
City Water Resilience Framework



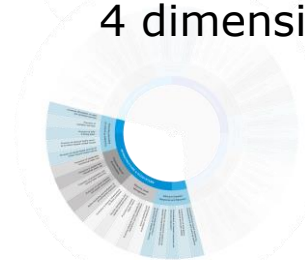
Leadership & Strategy



Planning & Finance



4 dimensions, 12 goals



Infrastructure & Ecosystems

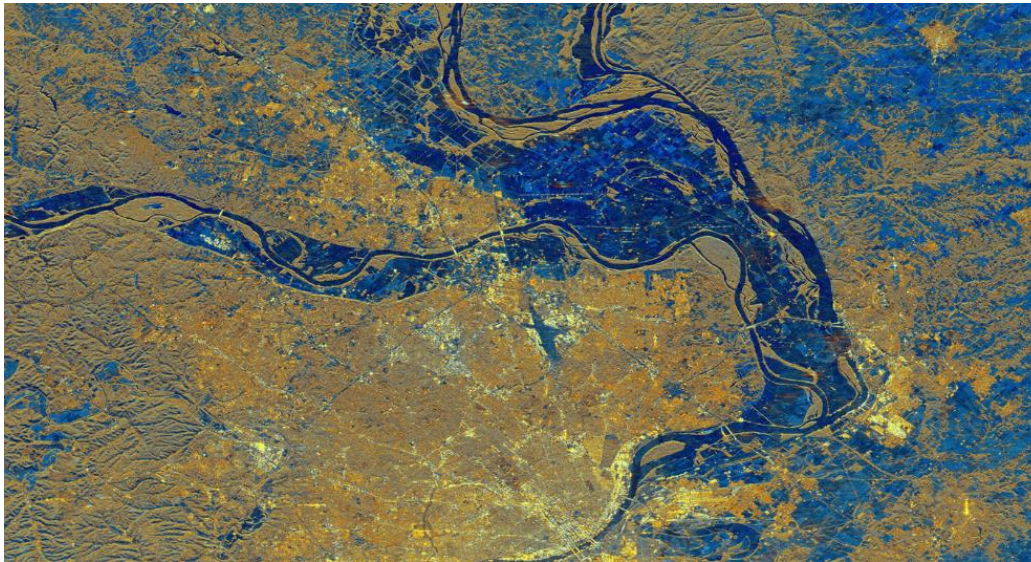


Health & Wellbeing

A vision for a resilient urban water environment? ⁸



Leveraged by digital technology; accessible platforms, enabling asset sharing, new insights



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.

A vision for a resilient urban water environment? ⁹



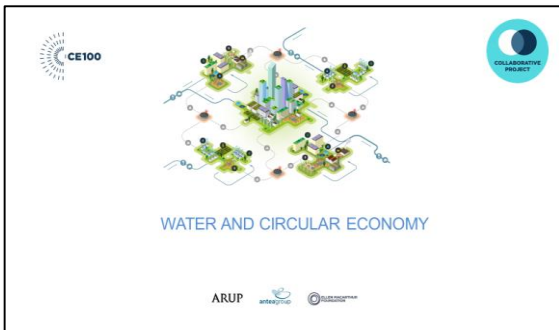
Holistic urban planning; design for resilience,
water as a catalyst, blue green



A vision for a resilient urban water environment? ¹⁰



Continuous material cycles; resource recovery, enhancing natural capital, keep resources in use and maximise reuse



Water White Paper



Stormwater Re-use



River Restoration

A vision for a resilient urban water environment? ¹¹



Flexible productive buildings; local, harvesting at source, flexible

Urban Bioloop + Energy Positive WWTW

- Concept development with Ellen MacArthur Foundation.
- Link between Urban Food, Urban Water, Urban Wastewater, and Urban Bio-wastes, and Urban Bio-material.



Water Sensitive Urban Design

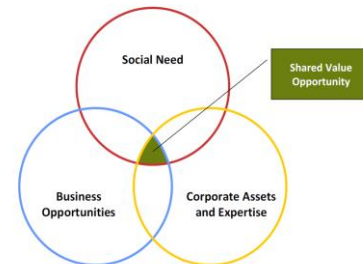
A vision for a resilient urban water environment? 12

\$ Full value of water; opportunities for shared value, valuation of wider benefits



DEFINING SHARED VALUE

Shared Value is found at the nexus of business opportunities, corporate assets, and social needs.



Source: Shared Value Initiative

Conclusions

Water and blue:green

- a pathway for future urban resilience;
- integral to the future circular economy;
- traditional approaches on their own not sufficient;
- opportunity for a step change (blue, green, grey, local, dispersed, SMART ..);
- need to do things differently ... data, value, governance, basin





Thank You

MILLENNIUM PARK CHICAGO

ARUP