



Presentation from  
**2016 World Water  
Week in Stockholm**

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Stockholm World Water Week 2016

# Resilience through Waterwise Cities

Dr Mark Fletcher  
Global Water Leader



# Outline

World Economic Forum  
Climate Change  
Urbanisation  
Rockefeller City Resilience Index  
IWA Principles for Water Wise Cities

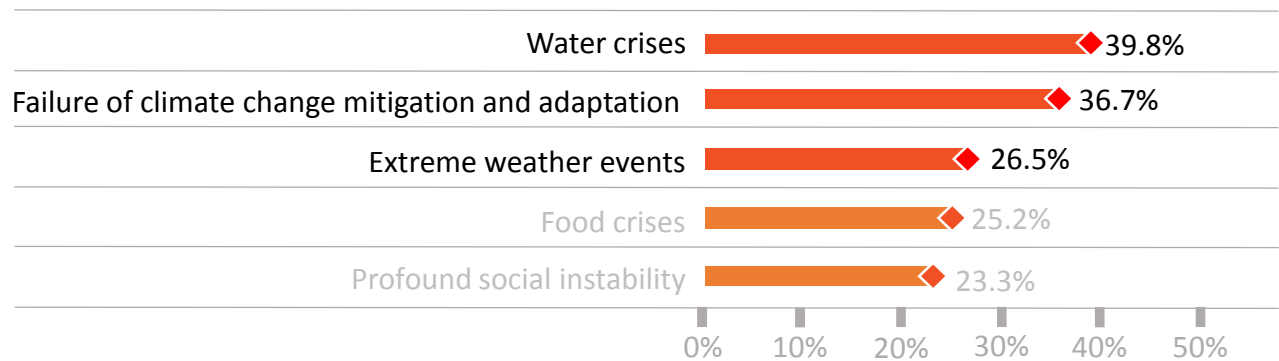


# World Economic Forum Global Risk Report 2016

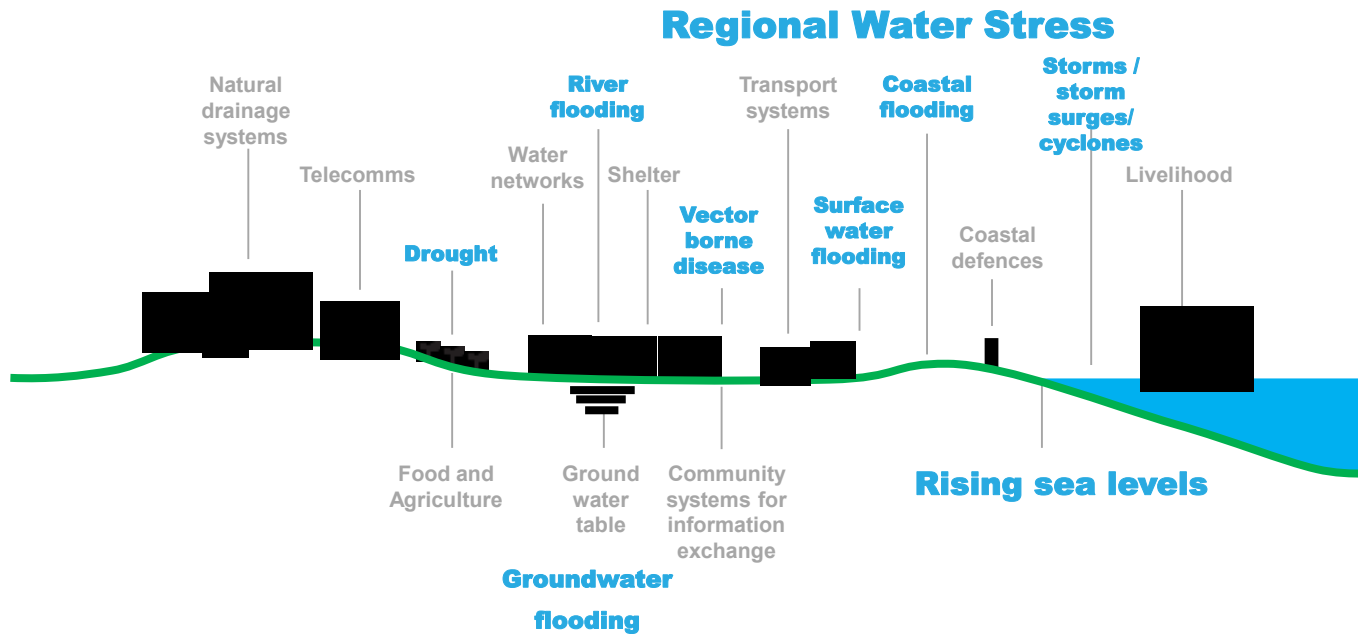


Insight Report

## The Global Risks Report 2016 11th Edition



# Climate Change water-related hazards



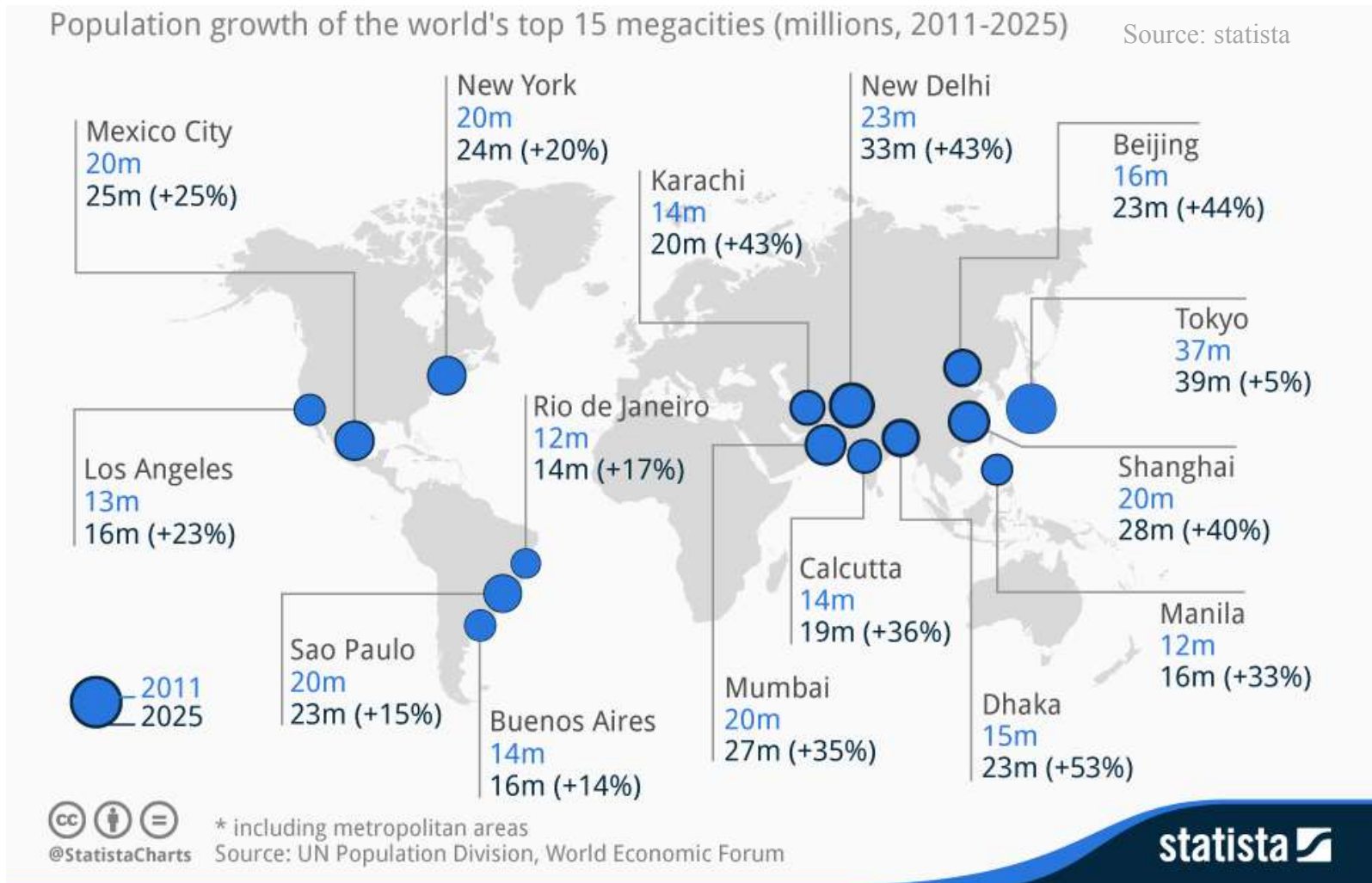
# More than half the world is now **urban**

**ARUP**





# The World's Megacities are **growing**







# Rockefeller City Resilience Index

ARUP



# Rockefeller **City Resilience Index**

**ARUP**

‘to articulate urban resilience in an  
**accessible, evidence-based and measurable way**  
that can inform urban planning, practice, and  
investment patterns’

Opportunity Statement, City Resilience Index February 2013



# Rockefeller City Resilience Index

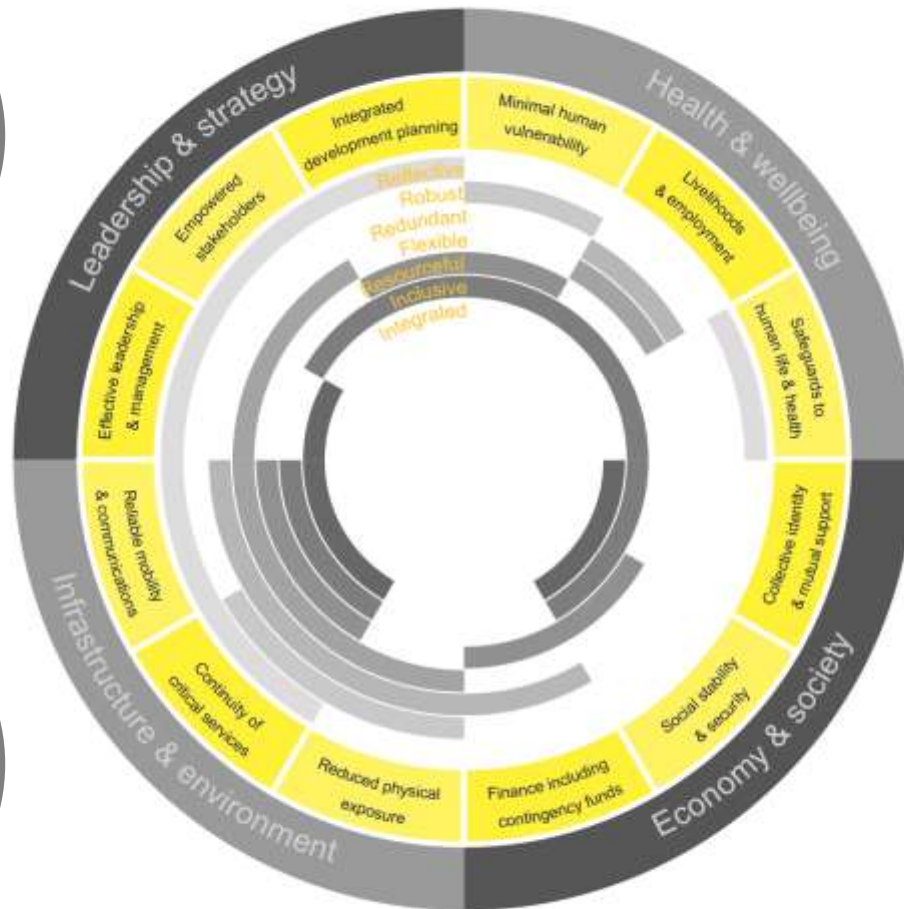


**Knowledge**  
“effective leadership, empowered stakeholders, and integrated planning”

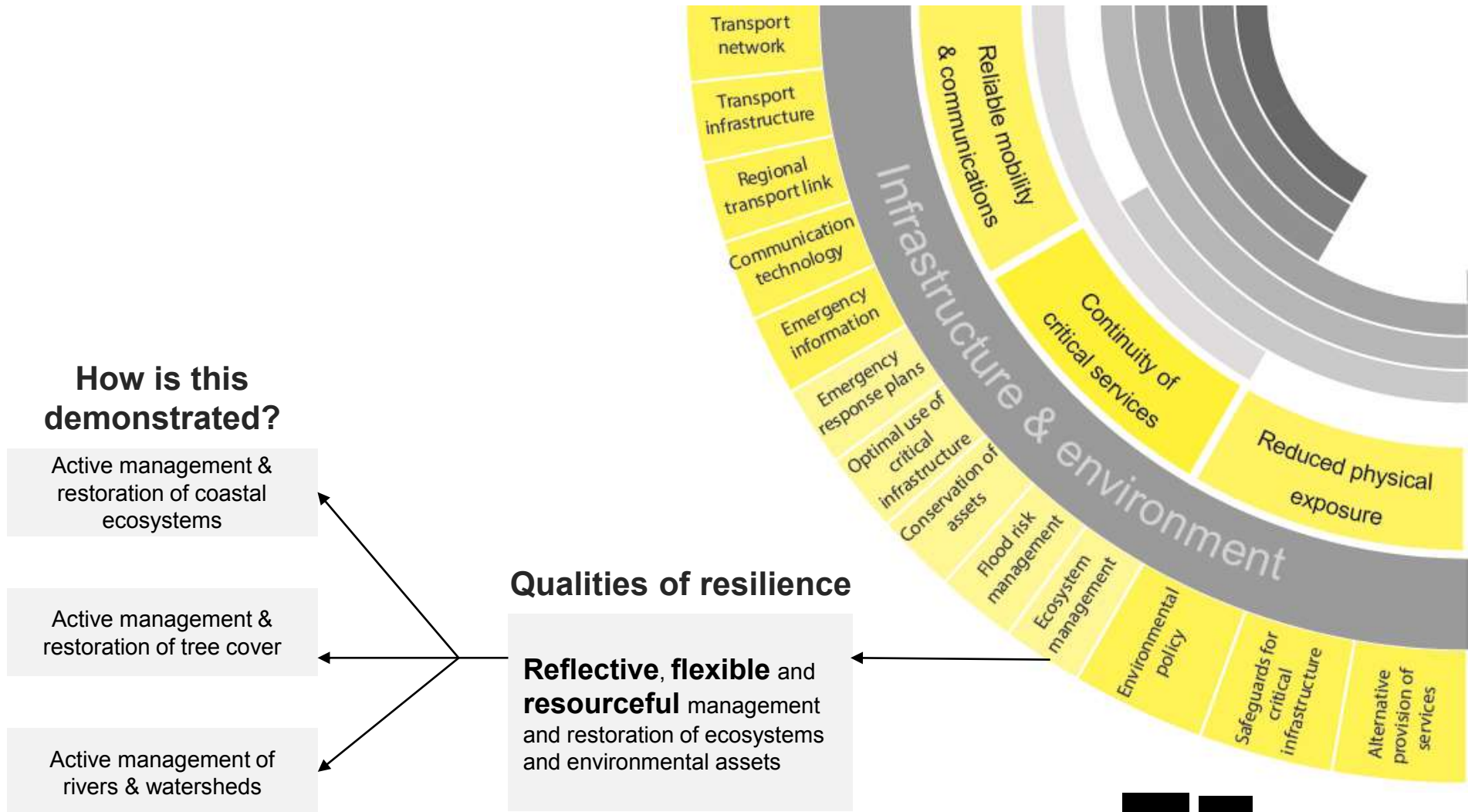
**People**  
“the health and wellbeing of everyone living and working in the city”

**Place**  
“the way in which man-made and natural infrastructure provides critical services and protects, and connects urban citizens”

**Organisation**  
“the social and financial systems that enable urban populations to live peacefully, and act collectively”



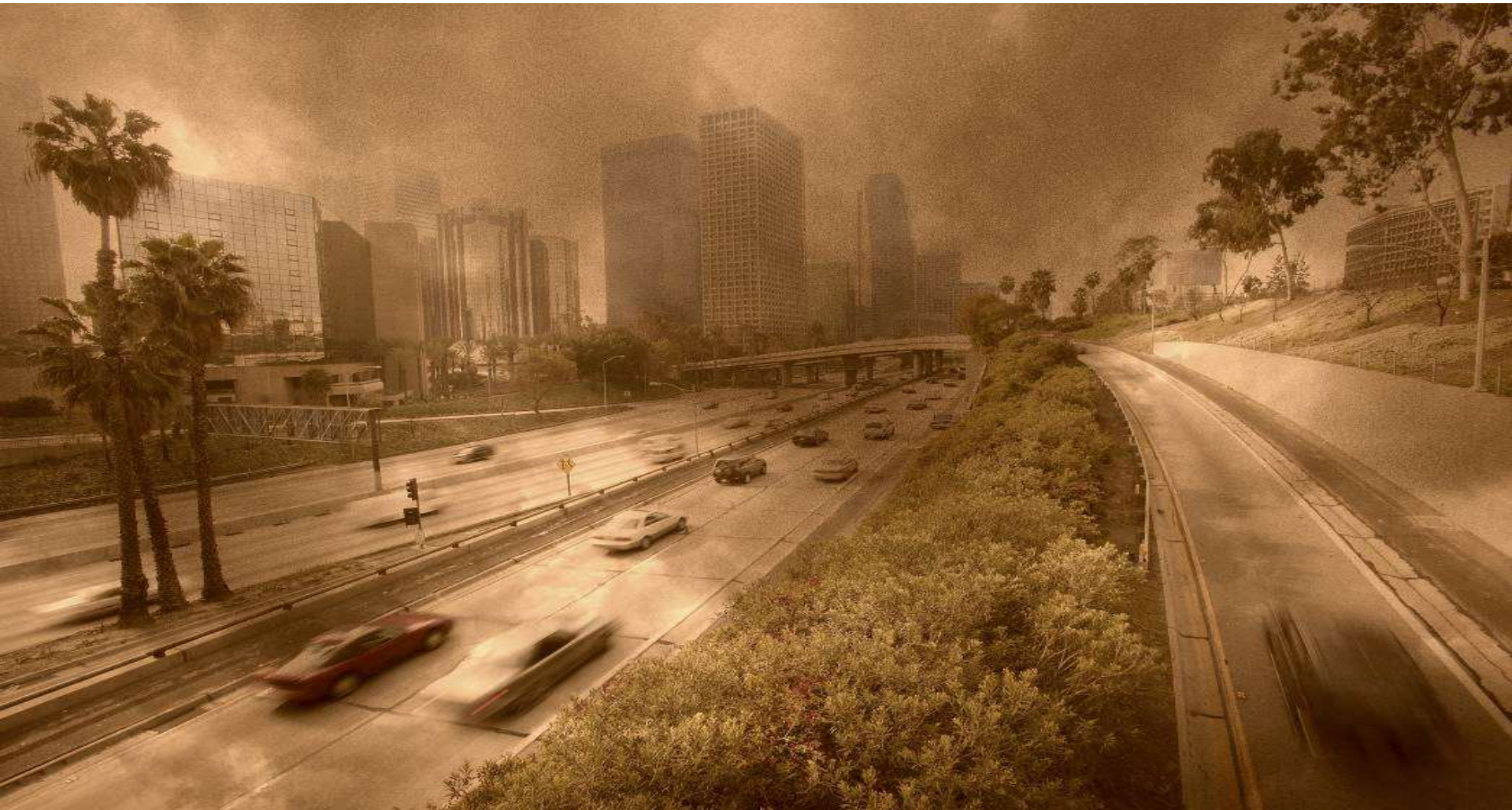
# Rockefeller City Resilience Index





Shock Change eg Storm  
Incremental Change eg Sea Level Rise

**ARUP**





# New York

## 5 feet sea level rise



Source: Nickolay Lamm/StorageFront.com; Data provided by Climate Central



# New York

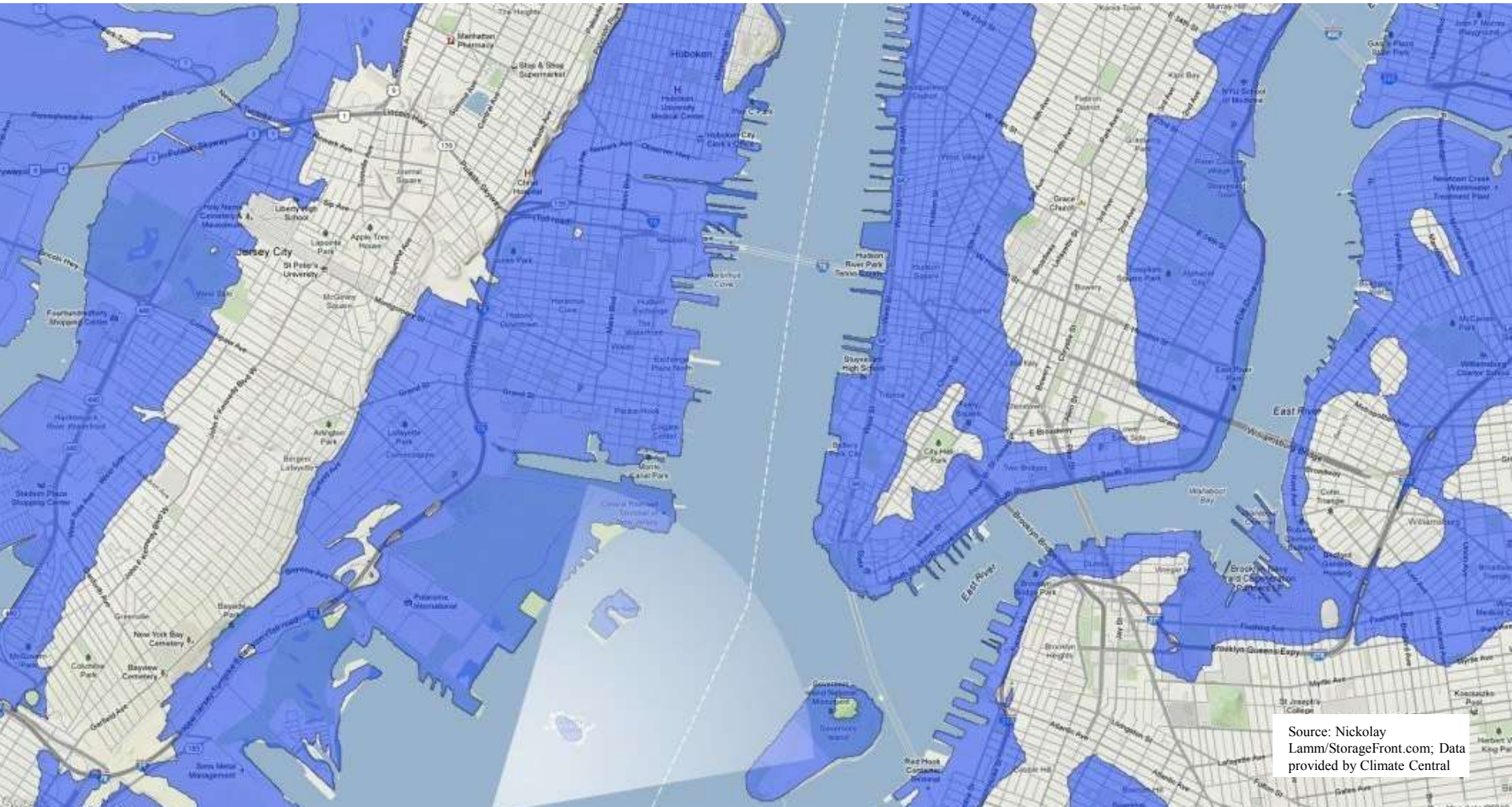
## 12 feet sea level rise





# New York

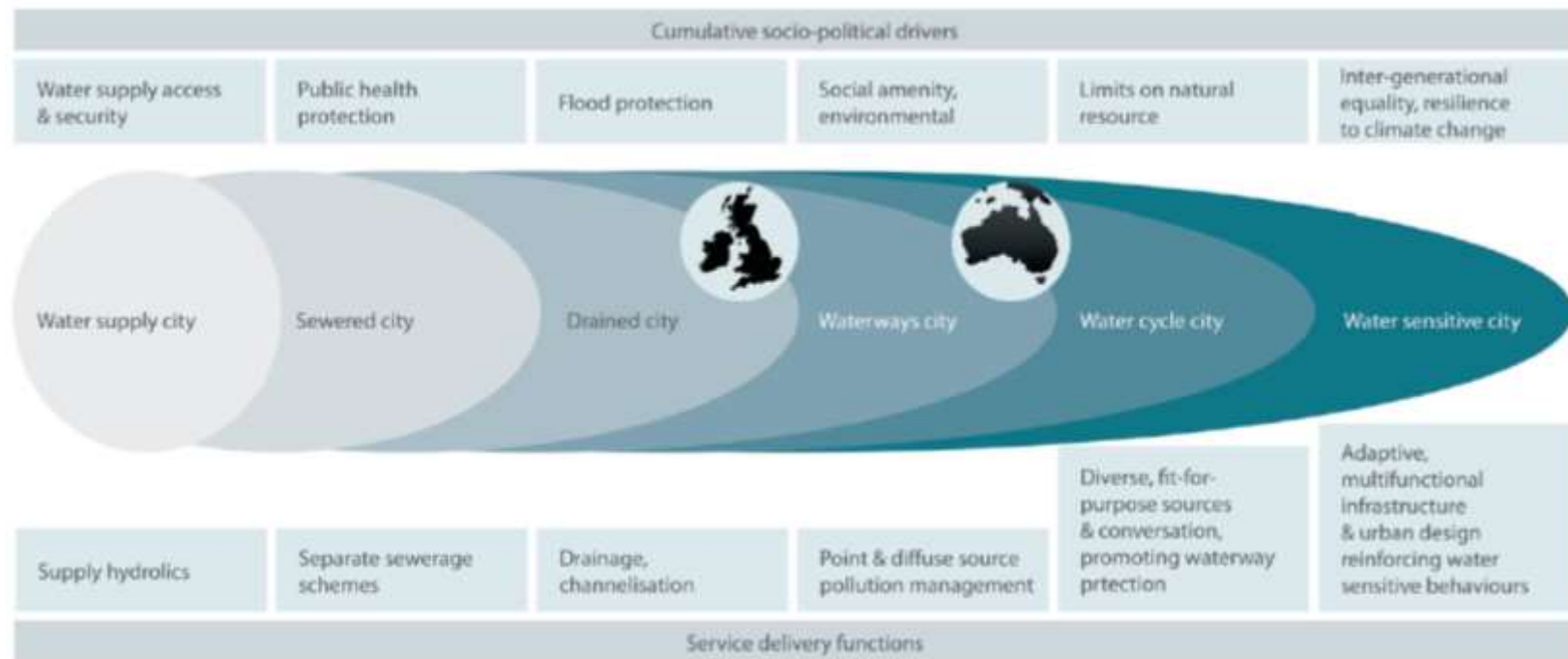
## 25 feet sea level rise



Source: Nickolay Lamm/StorageFront.com; Data provided by Climate Central

# Water-Wise Cities

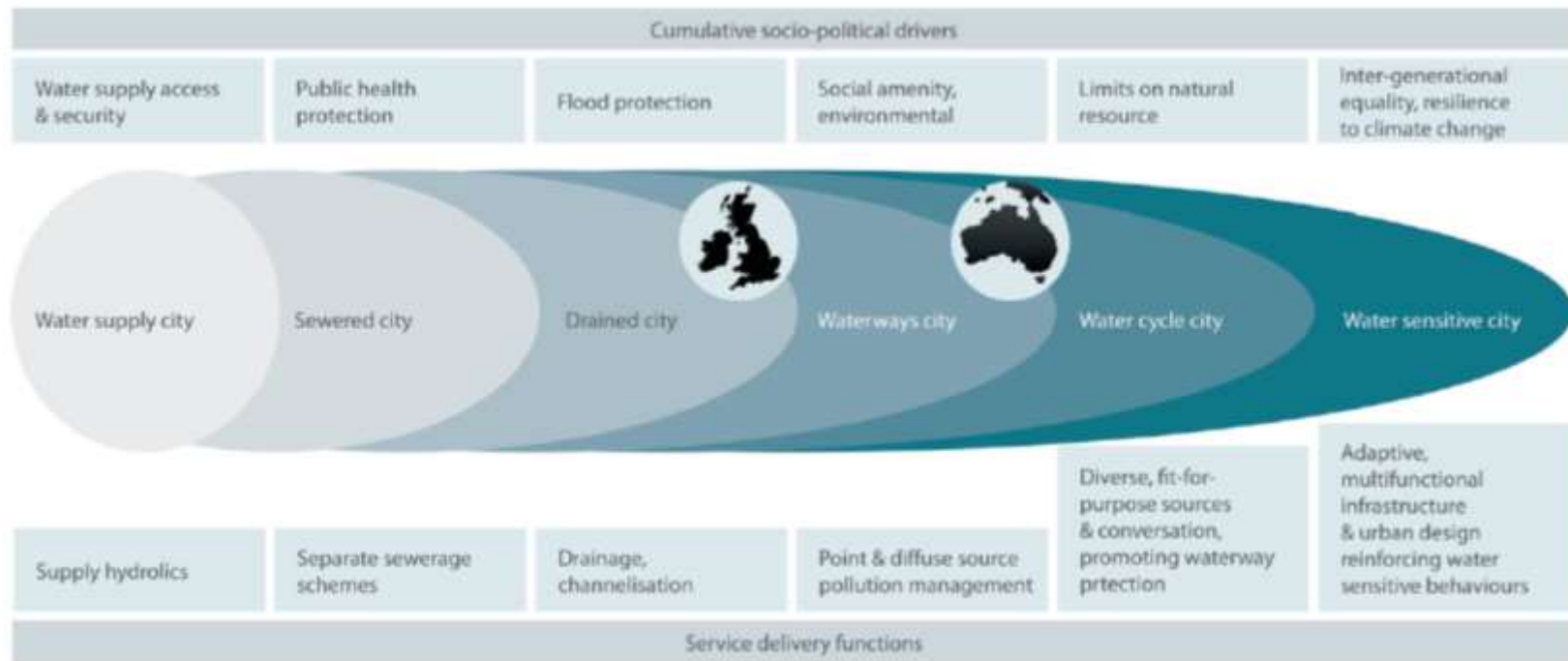
## The journey .....



Source CIRIA Report RP976, *Creating Water Sensitive Places* – diagram adapted from Brown et al 2008 (For full reference refer to CIRIA Report RP976, p106)

# Water-Wise Cities

## The journey.....



Source CIRIA Report RP976 , *Creating Water Sensitive Places* – diagram adapted from Brown et al 2008 (For full reference refer to CIRIA Report RP976, p106)



# Water-Wise Cities

## 17 Principles for Water-Wise Cities

### 4 Levels of Action

- Regenerative Water Services
- Water Sensitive Urban Design
- Basin Connected Cities
- Water Wise Communities

### 5 Building Blocks

- Vision
- Governance
- Knowledge & Capacity
- Planning Tools
- Implementation Tools



# Water-Wise Cities

## 1. Regenerative Water Services

- Replenish Waterbodies and their Ecosystems
- Reduce the Amount of Water and Energy Used
- Reuse and Use Diverse Sources of Water
- Apply a Systems Approach for Integration with Other Services
- Increase the Modularity of Systems for Multiple Options



# Water-Wise Cities

## 2. Water Sensitive Urban Design

- Enable Regenerative Water Services
- Design Urban Space to Reduces Flood Risk
- Enhance Livability with Visible Water
- Modify and Adapt Urban Materials to Minimise Environmental Impact



# Water-Wise Cities

## 3. Basin Connected Cities

- Secure Water Resources and Plan for Drought Mitigation
- Protect the Quality of Water Resources
- Plan for Extreme Events



# Water-Wise Cities

## 4. Water Wise Communities

- Empowered Citizens
- Incentivized Professionals
- Transdisciplinary Planning teams
- Progressive Policy Makers
- Leaders that Engage and Engender Trust





# Water-Wise Cities

## 5. Building Blocks



Vision



Governance



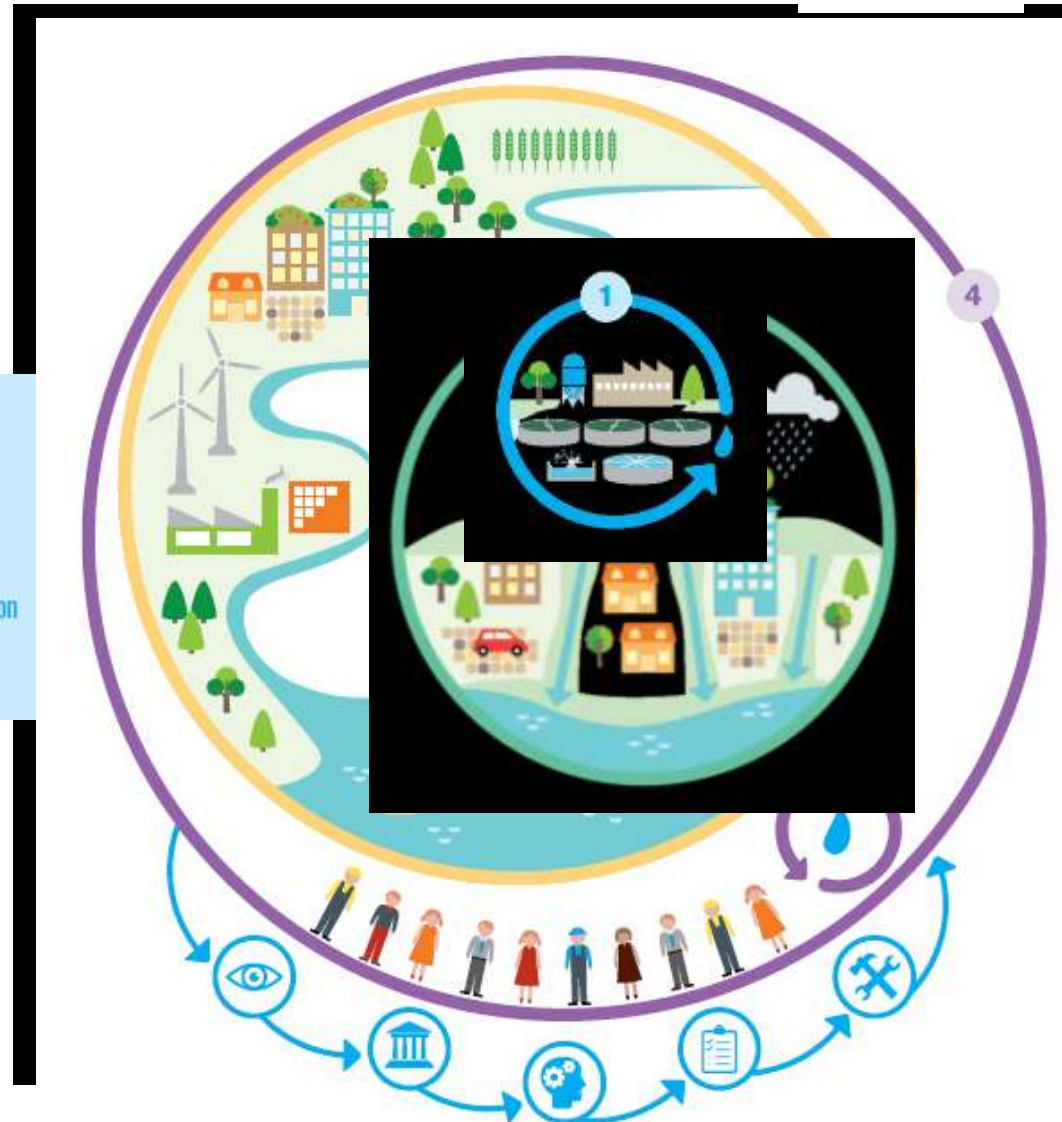
Knowledge  
& Capacity



Planning  
Tools



Implementation  
Tools





adaptation implementation



sustainable communities



adaptation planning & assessment

# Stockholm World Water Week 2016

C4O  
CITIES

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