C40 CITIES

CITIES ADDRESSING THE CLIMATE CRISIS

REALIZING IMPACTS AND PROACTIVELY **ADAPTING**

Green City National Conference
16. July 2019

THERE WILL BE NO FUTURE!

'S GETTIN HOT IN HERE TAKE OFF ALL YOUR COALS

CLIMATE ACTION

I VOTE

OUR FUTURE

CLIMATE CHANGE IS HERE

C40 brings together the World's top Mayors focused on the toughest climate targets in the World

94
Cities

700+
million citizens

1/4 of global economy

C40 CITIES

Crisis and the Urban Climate Evolution

from Reactive to Proactive in the Climate Crisis

1. CLIMATE CRISIS – WHY CITIES ARE TAKING ACTION NOW
2. PROACTIVELY TACKLING CLIMATE HAZARDS
3. INTERDEPENDENCIES, MAINSTREAMING AND YOU

C40 CITIES

At 1°C of over-heating C40 cities are already experiencing a new climate reality

Durban
Flooding and Landslide
April 2019

Tokyo
Heatwave
May 2019

Chennai
Water shortage
Feb-May 2019

Extreme weather impacts on C40 cities in 2018

General statistics:

- **81 out of 95, C40 Cities have experienced extreme weather events**;
- **78** cities experienced extreme weather temperatures, of which **55** faced a strong heatwave

and, on the other side, **23** faced a cold wave;

- **15** cities faced heavy storm and high precipitation;
- **48** cities experienced flooding;
- **22** have been affected by drought;
- **5** cities have had occurrences of landslide;
- **8** cities have had forest/wildfire.

➢ An estimate of **317 fatalities** due to extreme weather related events.

Europe

- *2018 was the most 'extreme year' for unusual weather events in Europe*
- **All 20 European C40 cities** experienced heatwave;
- 14/20 cities experienced cold wave;
- 6/20 experienced flooding;
- 3/20 experienced heavy storms and precipitation;
- 7/20 experienced drought;
- 4/20 experienced wildfires;
- An estimate of **78 fatalities** due to extreme weather related events in European C40 cities.


London, Cold wave, February, 2018


Athens, Wildfires, July, 2018


Athens, Flooding, July, 2018


Venice, Flooding, October, 2018

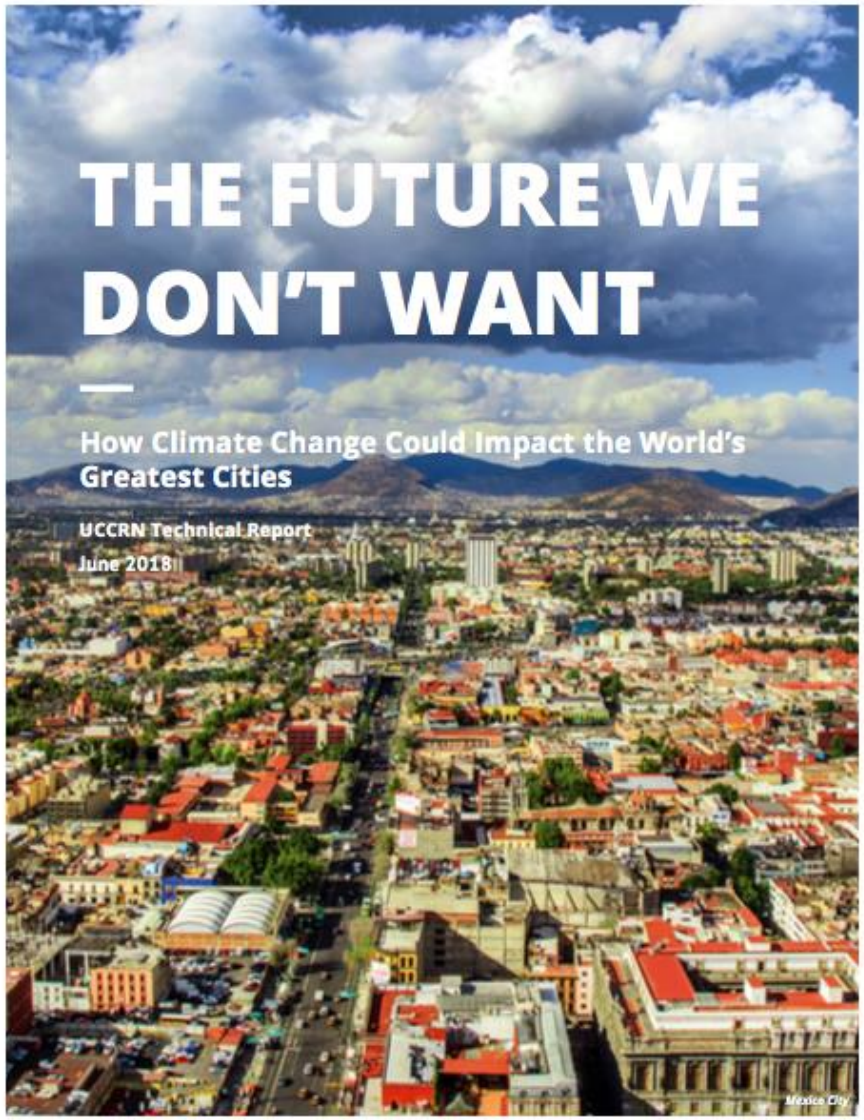

Warsaw, Heatwave, July, 2018


Istanbul, Landslide, June, 2018


Paris, Flooding, January, 2018


London, Heatwave, July, 2018

1. CLIMATE CRISIS – WHY CITIES ARE TAKING ACTION NOW



HEAT EXTREMES

1.6 billion people in 970 cities will face extreme heat due to climate change by 2050

+ More info

HEAT EXTREMES AND POVERTY

Poverty increases climate risks. 215 million urban poor in 495 developing country cities will be vulnerable to extreme heat by 2050

+ More info

WATER AVAILABILITY

650 million people in 500 cities will experience decreasing water supplies due to climate change by 2050

+ More info

FOOD SECURITY

By 2050, climate change will reduce key crop yields by at least 10 percent, impacting 2.5 billion people in 1,600 cities.

+ More info

SEA LEVEL RISE

800 million urban residents in 570 cities will be impacted by sea level rise and coastal flooding by 2050

+ More info

SEA LEVEL RISE AND ENERGY SUPPLY

Climate change and rising seas put the power supply at risk for 800 million urban residents in 230 cities by 2050

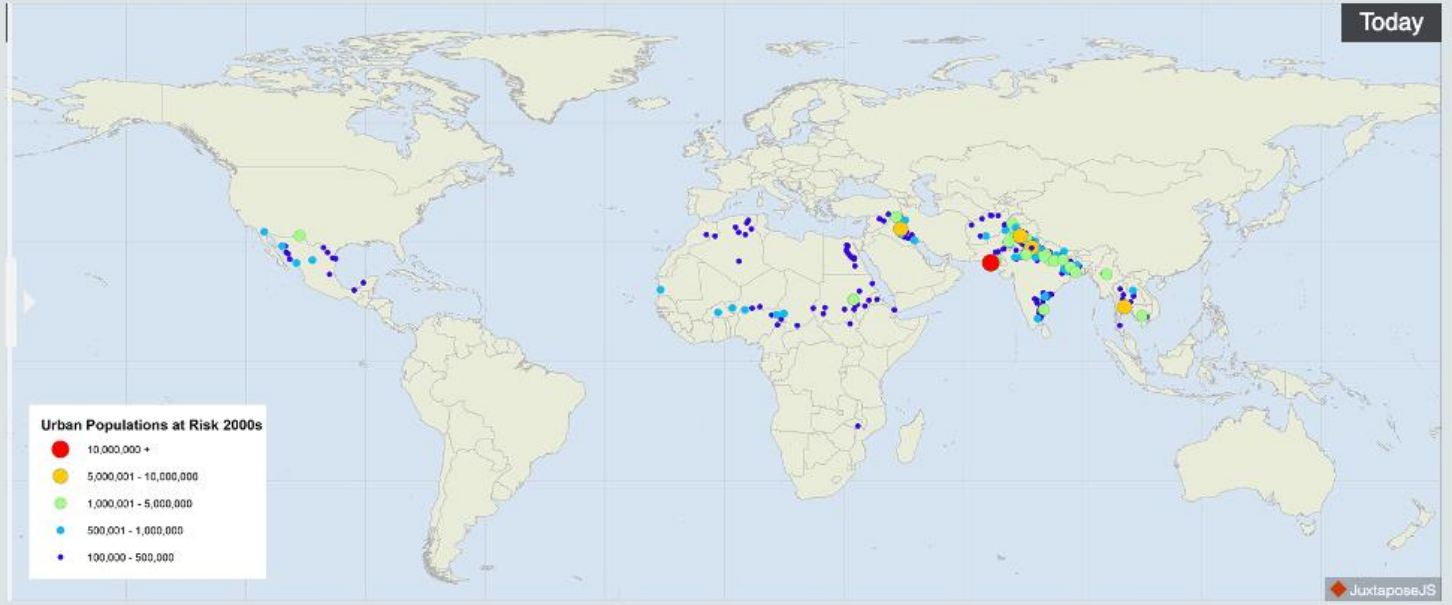
+ More info

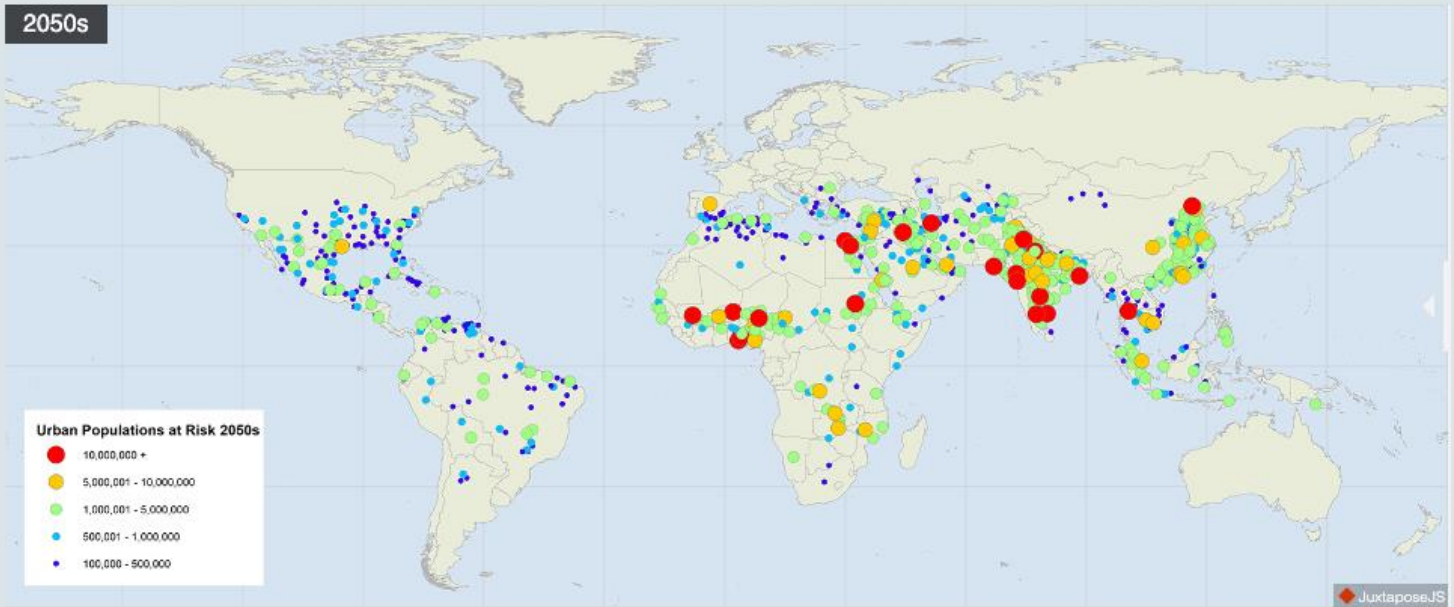
1 CLIMATE CRISIS – WHY CITIES ARE TAKING ACTION NOW

C40 CITIES · GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY · UCCRN URBAN CLIMATE CHANGE RESEARCH NETWORK · ACCLIMATISE building climate resilience

The Growth of Urban Populations and People at Risk

The map shows global cities with populations 100,000 and greater in the 2000s and estimated urban populations in the 2050s. The growth of cities means that ever more people will live in urban areas that are at risk from climate impacts such as heat extremes, water availability, food security, sea level rise and energy disruptions by the 2050s.





02.

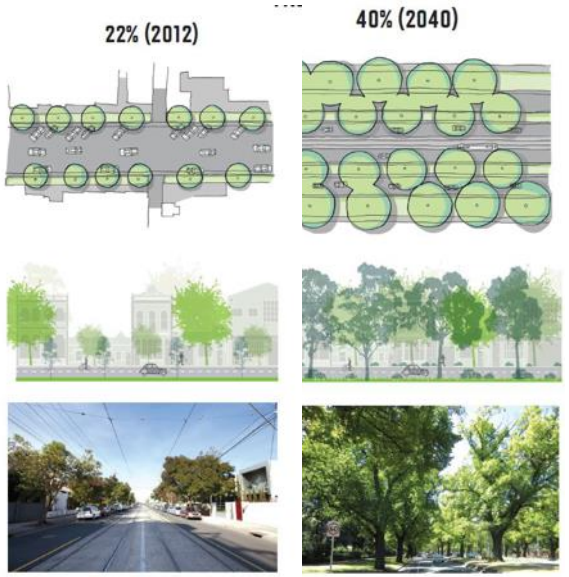
PROACTIVELY TACKLING CLIMATE HAZARDS

- HEAT
- FLOOD
- SEA LEVEL RISE AND COASTAL STORMS
- *WATER SHORTAGE /DROUGHT*

Cities are taking actions to “beat the heat”:

Cool pavements in **Los Angeles**

Shading the City – **Tel Aviv**



Urban Forest in **Melbourne**

Water spray parks in **Cape Town**

HEAT ACTIONS

- **Cool roofs & pavements**
- **Greening**
- **Shading**
- **Water**

Cool Cities Network & “Cascade” focus cities

1. Expand use of **cooling materials** for roofs and/or pavements to lower urban temperatures in the most vulnerable neighbourhoods of 3 cities

- → Los Angeles
- → Guadalajara
- → Tshwane

2. City-wide increase of green infrastructure for cooling purposes (green buildings envelope, street trees, parks etc.) in 3 cities

- → Buenos Aires
- → Melbourne
- → Athens

Tshwane
CCN Africa workshop, June 2019

LOS ANGELES
TORONTO
NEW YORK CITY
PHILADELPHIA
WASHINGTON DC
GUADALAJARA
MEDELLIN
QUITO
RIO DE JANEIRO
BUENOS AIRES
LONDON
PARIS
MADRID
LISBON
BERLIN
ROME
ATHENS
BARCELONA+
TEL AVIV
DUBAI
ACCRA
DAR ES SALAAM
TSHWANE
DURBAN
CAPE TOWN
SEOUL
TOKYO
SYDNEY
MELBOURNE

Cities are taking actions to manage floods:

Chinese Sponge Cities – **Wuhan; Shanghai**

Opening Urban Space for Water

Water Reservoirs – **São Paulo**

Increase Water Retention

FLOOD ACTIONS

Increase Water Infiltration

Cloudburst Pilot Project – **New York**

Slowing the Rain Peak Flow

Blue/Green Factor - **Oslo**

Urban Flooding Network & "Cascade" focus cities:

Tel Aviv
São Paulo Workshop, June 2019

TORONTO
NEW YORK
PORTLAND
PHILADELPHIA
WASHINGTON DC
LOS ANGELES
HOUSTON
OSLO
LONDON
ROME
TEL AVIV
DHAKA
YOKOHAMA
HANOI
HO CHI MINH
CHENNAI
LAGOS
QUEZON CITY
JAKARTA
JOHANNESBURG
DURBAN
RIO DE JANEIRO+
SÃO PAULO
CURITIBA
BUENOS AIRES+
AUCKLAND

1. Cities have developed Sustainable Urban Drainage systems to manage excess rainfall due to climate change

2. Cities have developed comprehensive flood risk maps and models incorporating future climate risks.

Cities are taking actions to manage coastlines:

Coastline Protection

Coastal protection in **Jakarta**

COASTAL ACTIONS

Natural coastlines & urban retreat

Coastal retreat in **New York City**

Accommodate: Coastal zoning and codes

Floating Pavilion, **Rotterdam**

Connecting Delta Cities Network & “Cascade” focus cities:

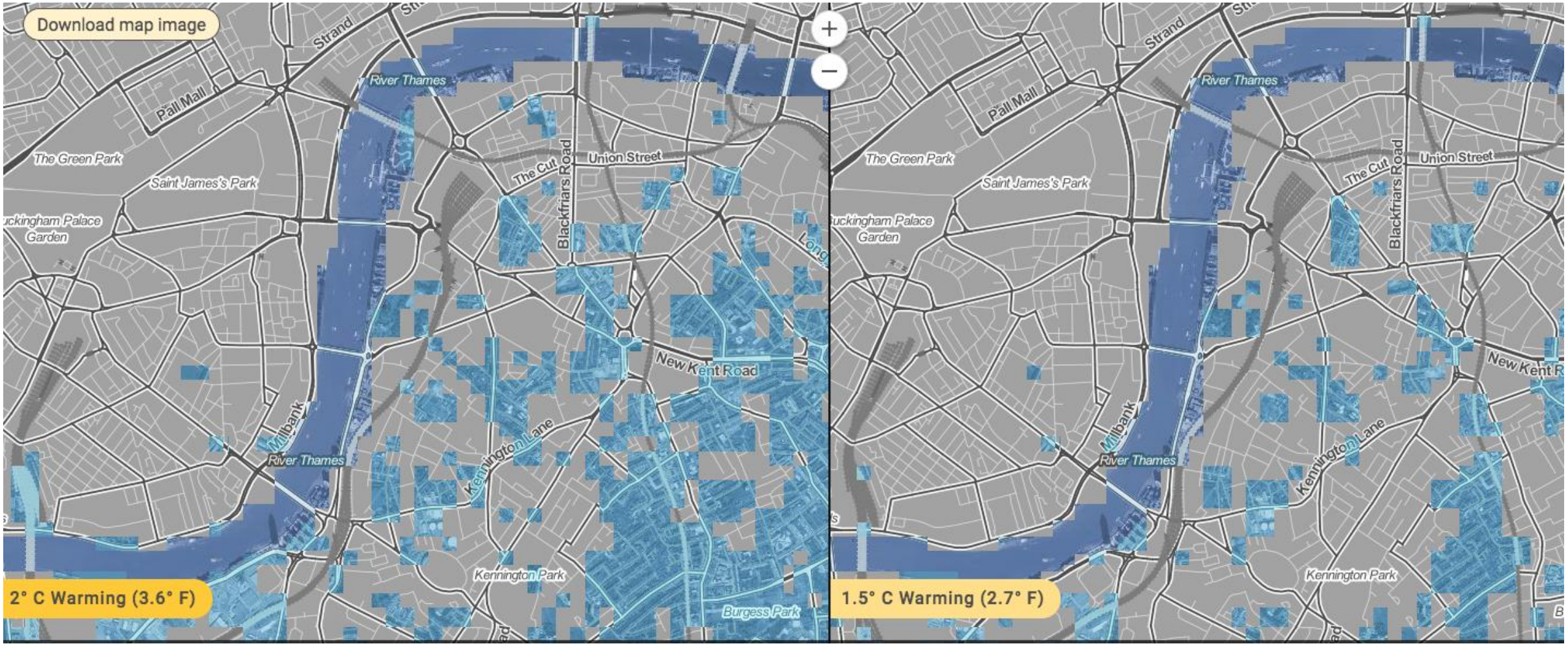
VANCOUVER
NEW YORK CITY
WASHINGTON DC
NEW ORLEANS
LONDON
COPENHAGEN
ROTTERDAM
VENICE
TOKYO
HONG KONG
HO CHI MINH CITY
SINGAPORE
JAKARTA
RIO DE JANEIRO
MELBOURNE

1. Cities implementing new Coastal Protection Barriers or Natural Edges preparing sea level rise or storm scenarios
   → Vancouver
   → New York City
   → Copenhagen

2. Cities have Coastal Floodplain Regulations for zoning, buildings, or infrastructure
   → Washington DC
   → Rio de Janeiro

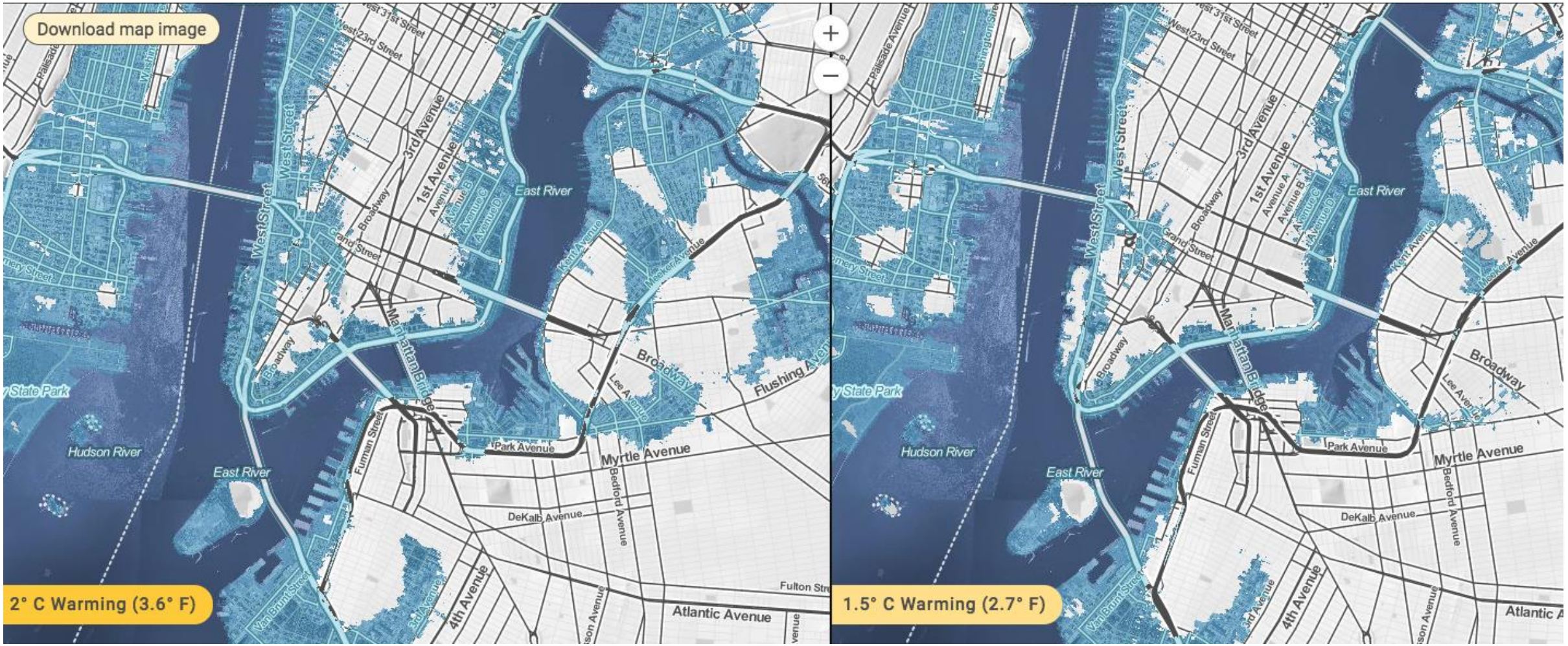
New York City
Study tour, May 2019

Which see level will we lock in?



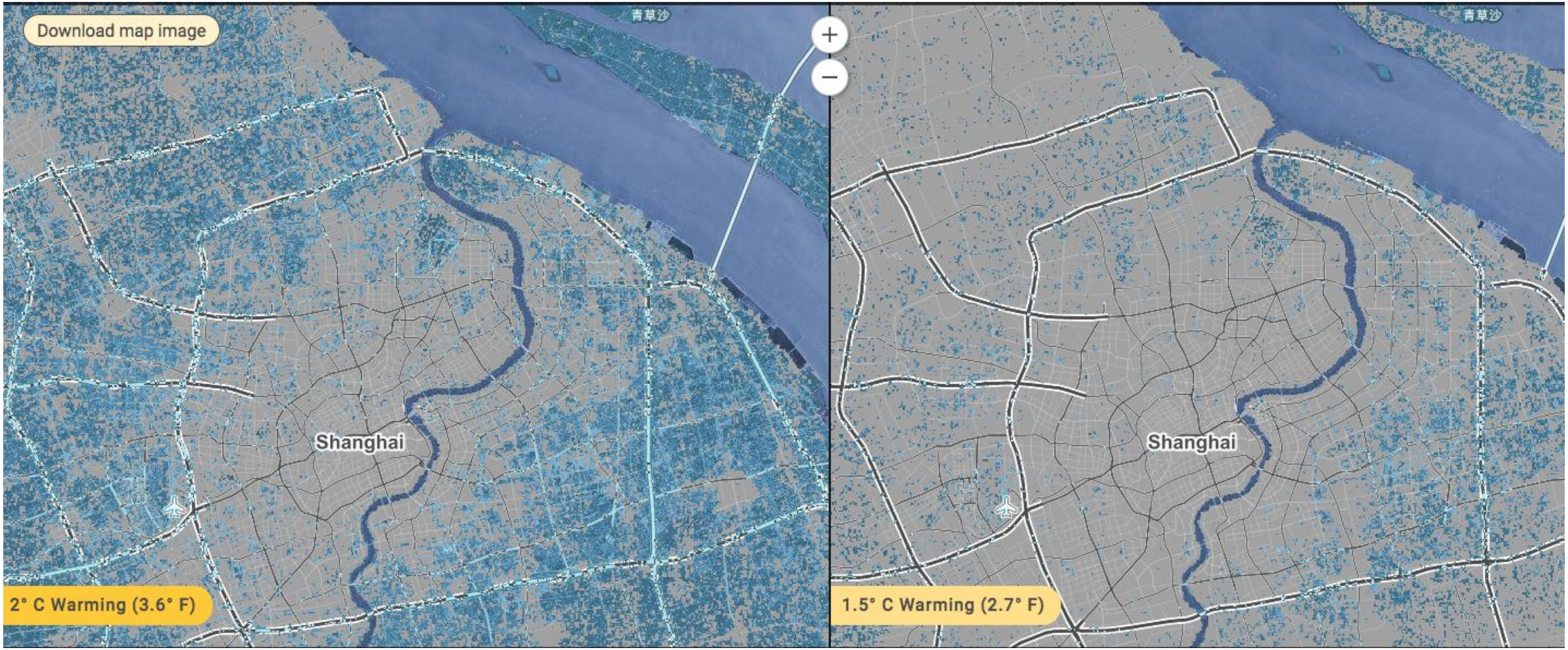
London

Which see level will we lock in?



New York

Which see level will we lock in?



Shangai

Cities are taking actions to manage drought and water scarcity

Campaign in **Cape Town**

Training Plumbers in **Amman**

Water demand management

Fixing leaks

DROUGHT ACTIONS

Equitable water costs

Lifeline water in **Delhi**

Basin Protection

Watershed Protection Fund in **Quito**

Urban Water Management Network *(to come)*

27% of C40 cities are already water stressed

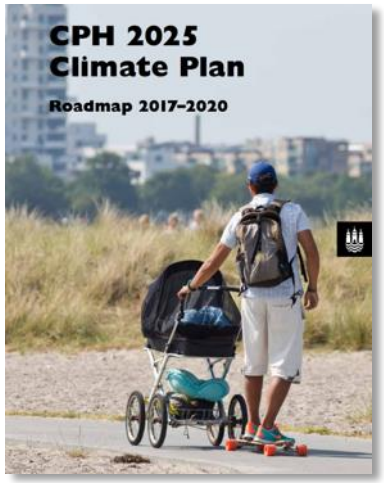
70% of C40 cities foresee risk to their water supply

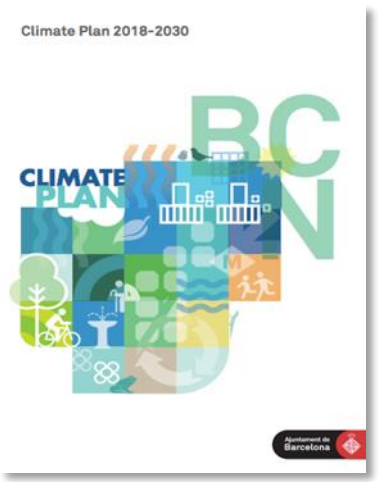
03.

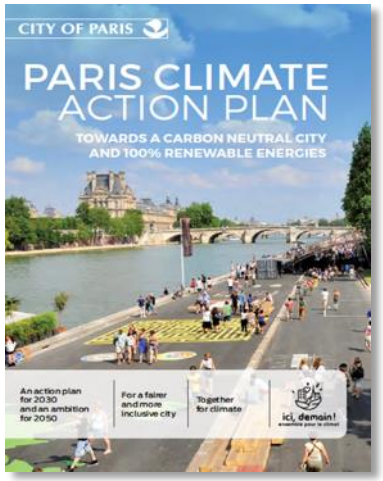
INTERDEPENDENCIES MAINSTREAMING AND YOU

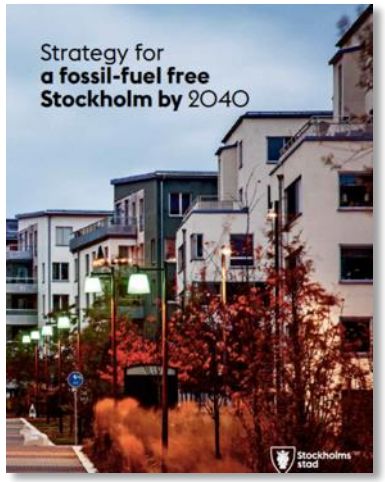
- PLANNING
- SECTOR-BASED STRATEGIES
- COMMUNITY ENGAGEMNT AND EQUITY
- *WHAT'S NEXT . . . YOU*

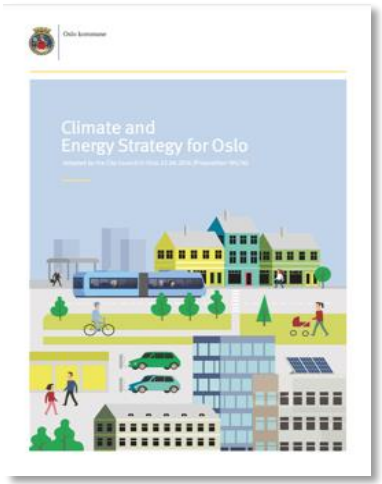
Adaptation Planning built into comprehensive CAPs

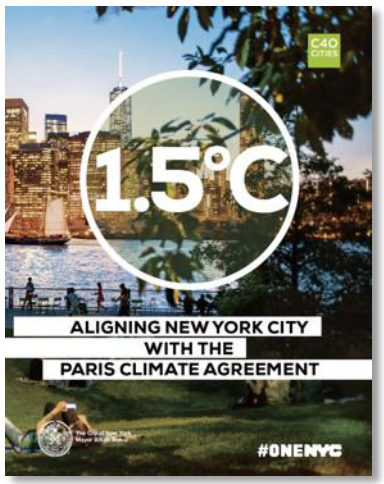


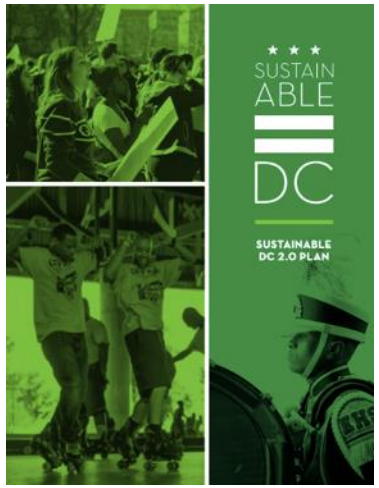




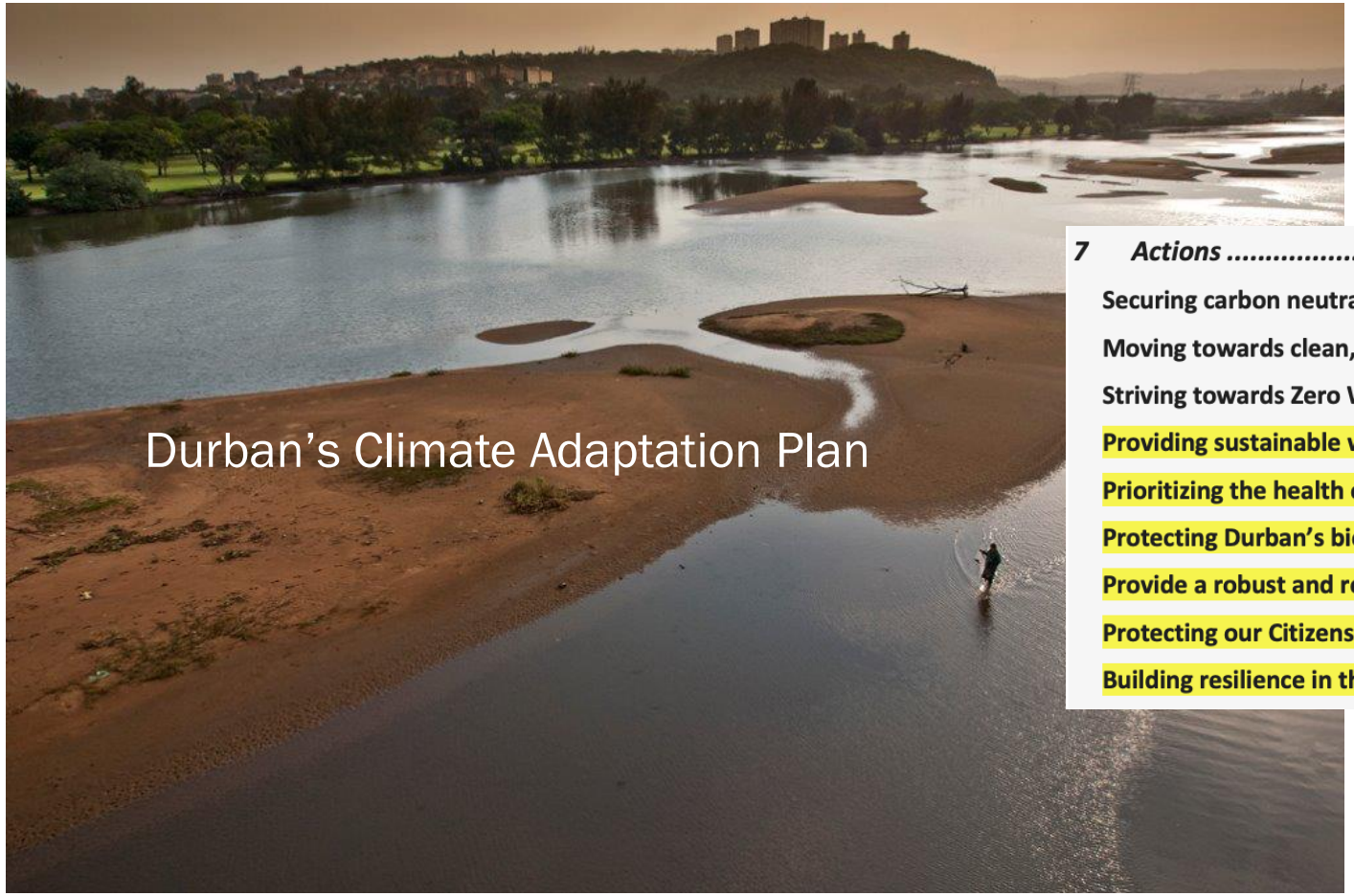








Adaptation Planning built into comprehensive CAPs



Sectoral Integration of Adaptation

. . . So we don't get this

Interdependencies and Cascading Impacts

Example of a sector that impacts multiple sectors: **Transportation**

extreme precipitation

Damage to and/or temporary inundation of roadways/railways and stationary facilities

extreme heat

Rail buckling, mandatory vehicle speed reduction orders

sea level rise

Permanent inundation of railways/roadways and stationary facilities

transportation

Disruption to freight distribution

food

Disruption to maintenance and decentralized water delivery services

water

Disruption to maintenance and fuel delivery services

energy

Disruption to maintenance services

telecomm

Disruption to maintenance and decentralized wastewater collection services

wastewater

Disruption to waste collection services

solid waste

Commuters and freight disruption

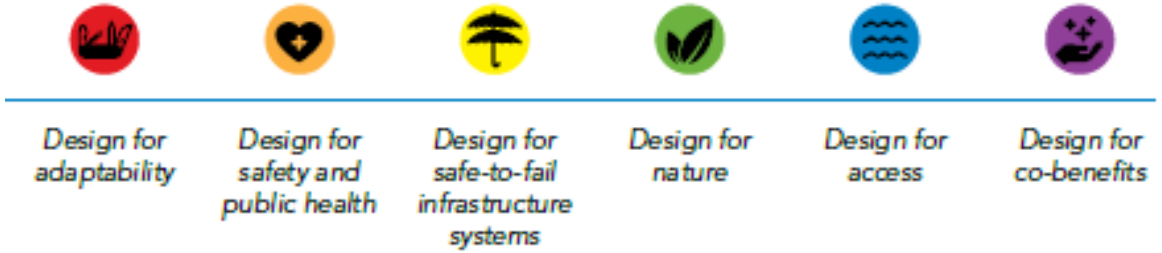
Public health consequences

Environmental contamination

economic consequences

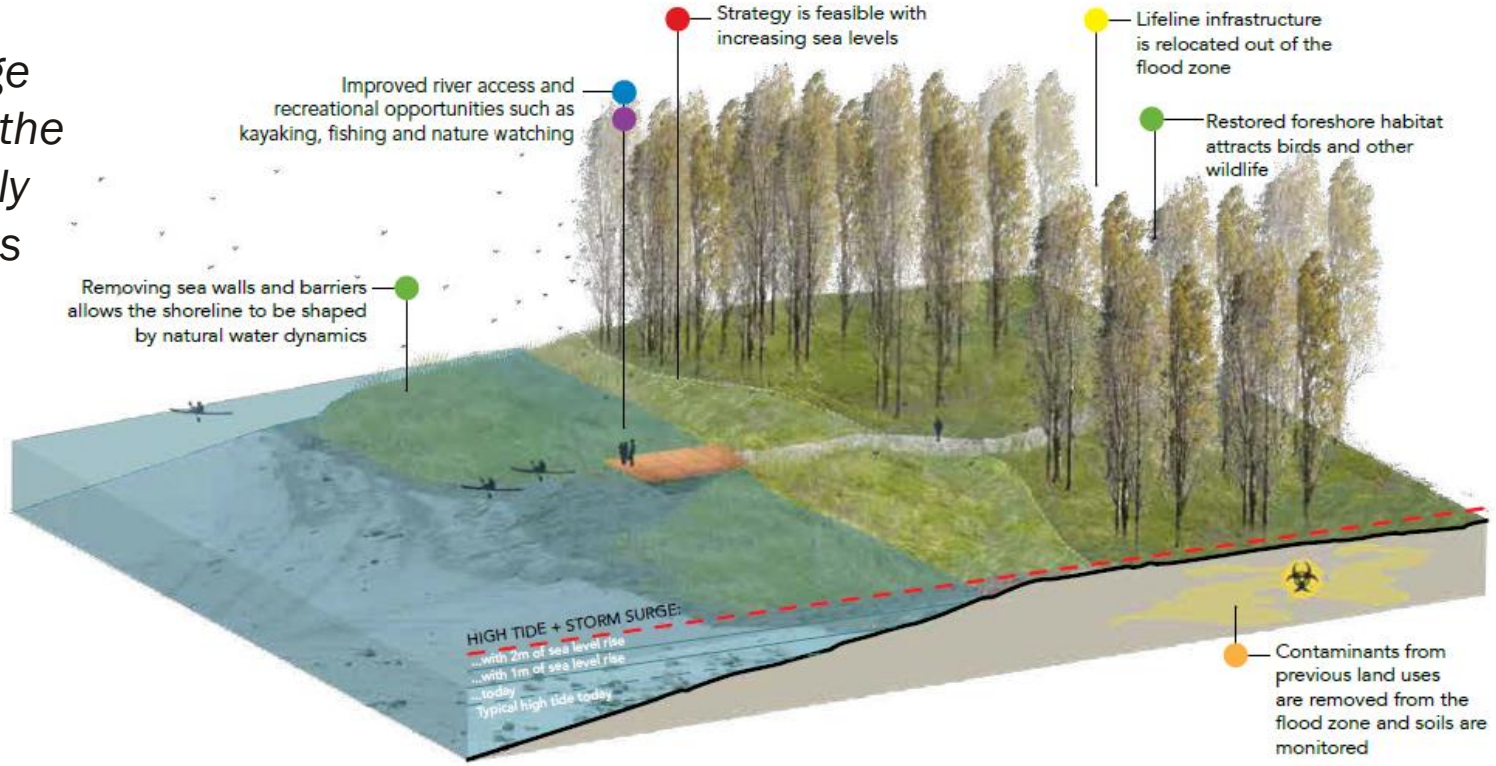
Toronto

Community Engagement



Community Values in Design Principles, Vancouver

A values-based approach to climate change adaptation is one that acknowledges that the impacts of climate change are only partially understood through technical assessments



Citizen Knowledge: power over heat risk

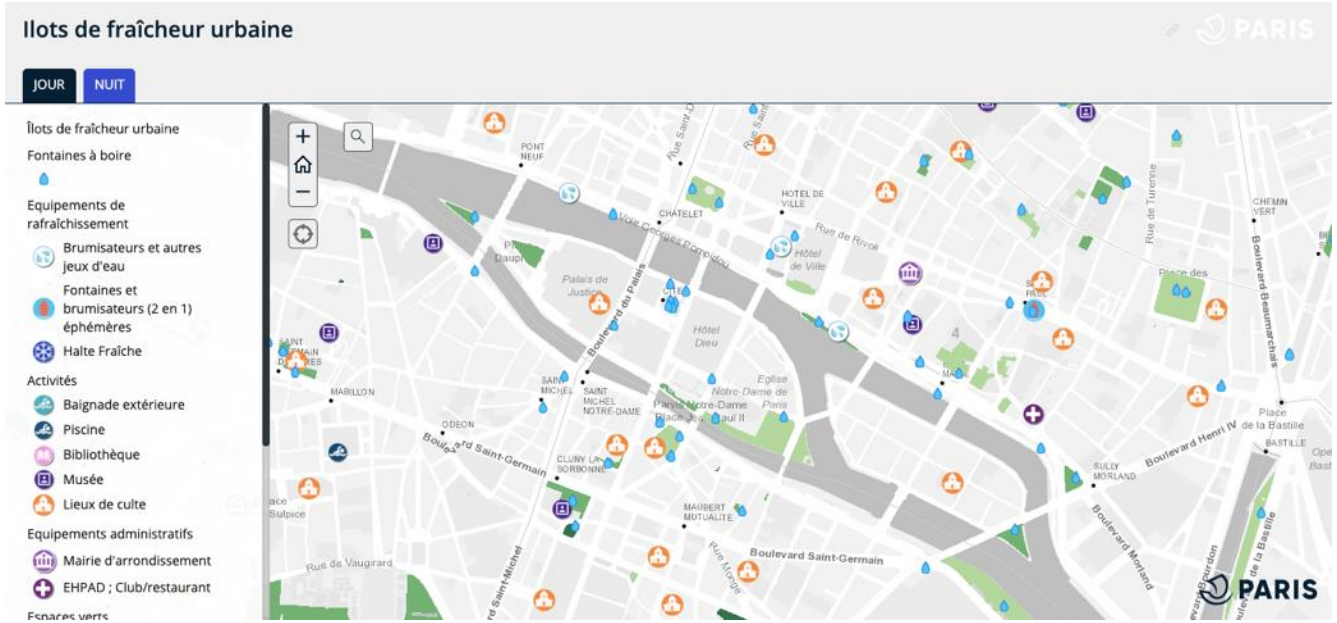
EXTREMA APP

App & online dashboard that uses real-time satellite data to estimate the temperature, humidity and discomfort index across the city and gives cooling centre recommendations for users to go to.

→ **PARIS**

→ **ATHENS**

→ **ROTTERDAM**



Creating Jobs, Conquering Floods

Sihlanzimvelo Programme

The City of Durban program work with the local communities to recover urban streams, by removing waste and alien species while restoring the river riparian zones.

- **PARTNERSHIP WITH 59 CO-OPERATIVES**
- **472 WORKERS**
- **295 Km of Stream**
- **R26 MILLION PER ANNUM**

2011

2019

People say that if you find water rising up to your ankle, that's the time to do something about it, not when it's around your neck.

Chinua Achebe
Nigerian author

Time to Accelerate

Not only Cities must experiment new solutions, but most importantly they must accelerate actions.

A lot of solutions are already existing.

The main challenge is not technological but to scale up the implementation of solutions.