



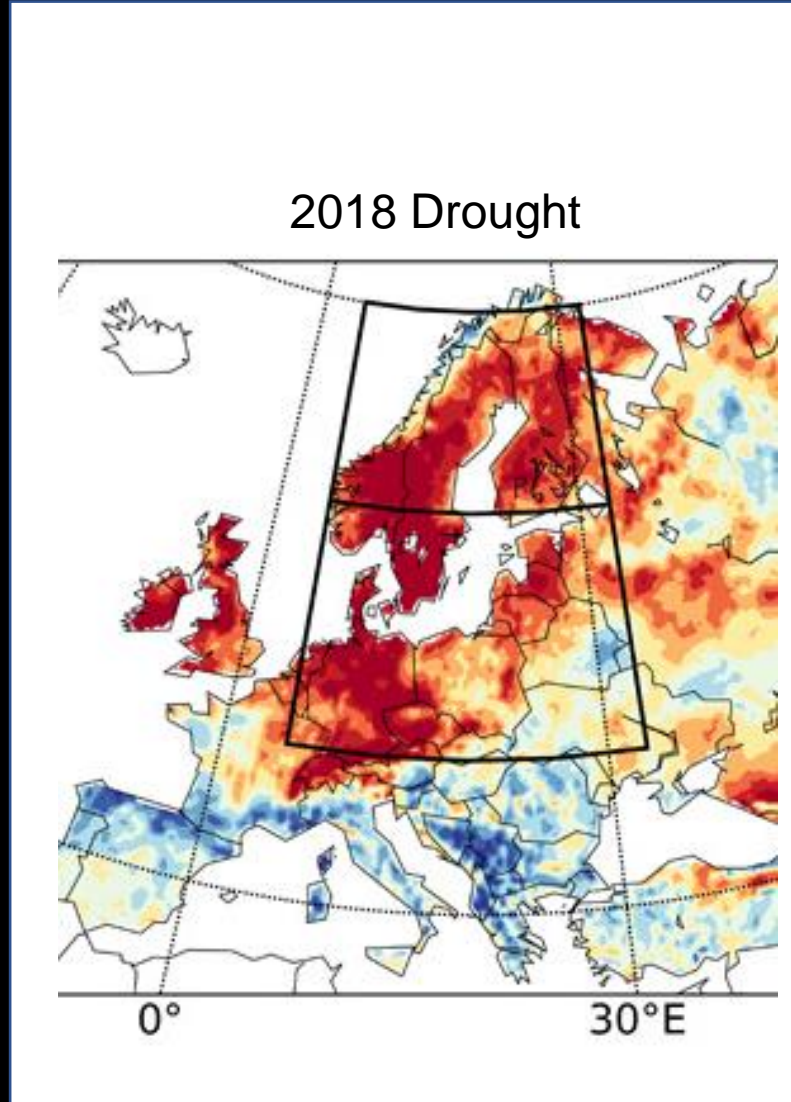
Transitioning to Climate Smart Water in Cities

Corinne Trommsdorff – February 18, 2021

Baltic Sea Region Water Platform



Too much, too little, too dirty



The Impacts of Climate Change on Water in Cities



Climate Impacts on Water Resources	Impacts on Utilities
Water scarcity & increased water demand	Alternative supplies / reduced consumption & losses / water demand management
Reduced water quality & overuse	Increased drinking water treatment requirements
Reduced low flows in rivers and increased temperature	Increased WW treatment requirements
Increased intense rain events	Protection against floods / increased treatment capacity for combined sewer networks
Sea level rise	Asset damage due to submersion and higher water-table Increased drinking water treatment requirements due to salt intrusion

Urgency to take action to adapt... ... & mitigate?

1 IN 3 SPECIES
THREATENED BY
EXTINCTION
IS NOT A CHANGE.

DON'T CALL IT CHANGE, CALL IT
CLIMATE EMERGENCY

TIMEFORACTION



75% OF

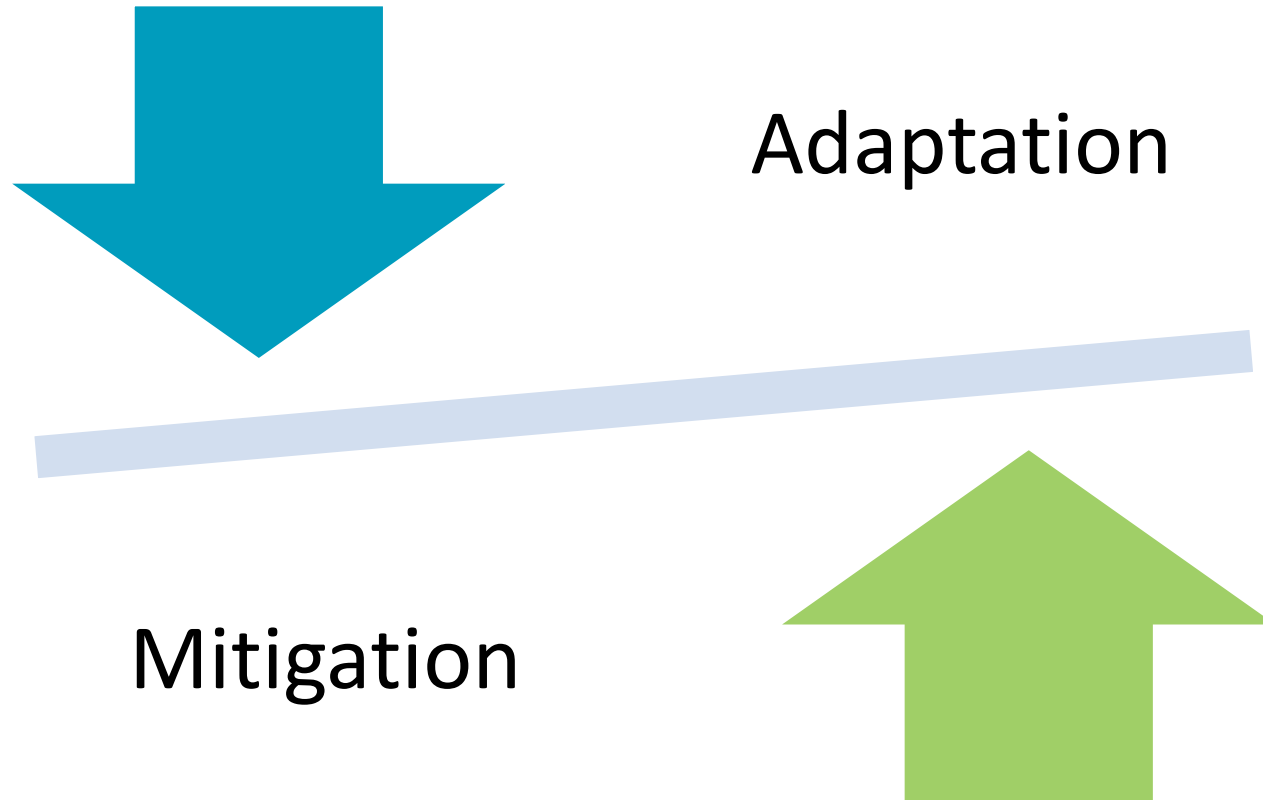
SPAIN

BEING AT RISK OF DESERTIFICATION
IS NOT A CHANGE.





The risks of urgent adaptation strategies



In the urgency:
-> adaptation measures prevail

With timely planning:
-> adaptation can be anticipated
-> mitigation can only be included in choices **if the utility is mandated** to reduce its carbon footprint

Why reduce emissions from urban water?



GHG indirect Emissions

From the 4% of the global energy used by the water sector

Nitrous Oxide Direct Emissions

298 x the effect of CO₂
Emitted during conveyance and treatment of WW and at river discharge

WaCCliM pilot utilities emissions in kgCO₂e/pers.year

	Jordan	Mexico	Peru
⚡ water abstraction	222	24	79

Methane Direct Emissions

34 x the effect of CO₂
Emitted during conveyance and treatment of WW, and at river discharge of untreated sewage

Fuel based water heating :
~1000 kgCO₂e/pers.year

ECAM TOOL:

<http://wacclim.org/ecam/>

wastewater discharge

water treatment

⚡ water loss
💧 GHG emissions

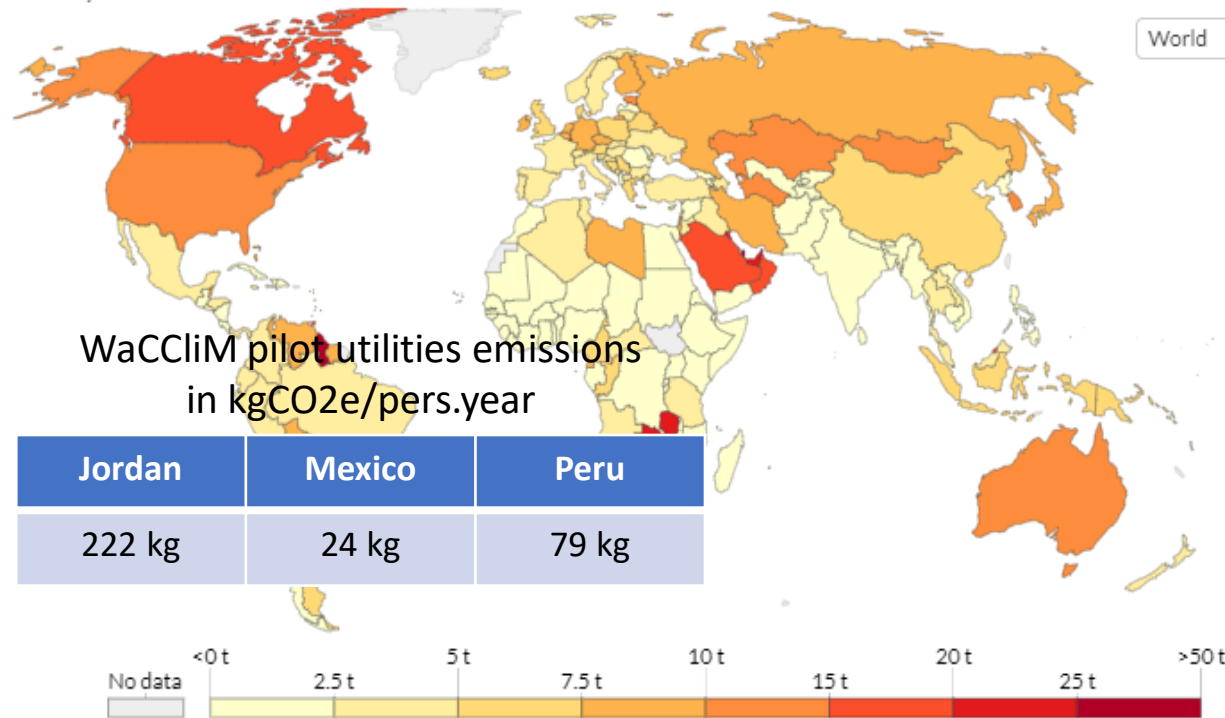
⚡ energy use
💧 water loss
☁ GHG emissions

Why reduce emissions from urban water?



Per capita greenhouse gas emissions, 2016

Per capita greenhouse gas emissions are measured in tonnes of carbon-dioxide equivalents (CO₂e) per person. This metric converts all greenhouse gases to CO₂e based on their global warming potential value over a 100-year timescale.



Source: CAIT Climate Data Explorer via Climate Watch
Note: Emissions from forestry and land-use change are included.

1990 2016

Our World in Data

Jordan

SCALE OF MITIGATION



Equivalent to taking 200 cars off the road

BENEFICIARIES OF IMPROVEMENTS



208,000 people

Mexico

SCALE OF MITIGATION



Equivalent to planting 12,400 trees a year

BENEFICIARIES OF IMPROVEMENTS



140,000 people

Peru

SCALE OF MITIGATION



Equivalent to preventing 5,300 passengers a year from flying Lima-Frankfurt-Lima

BENEFICIARIES OF IMPROVEMENTS



415,000 people

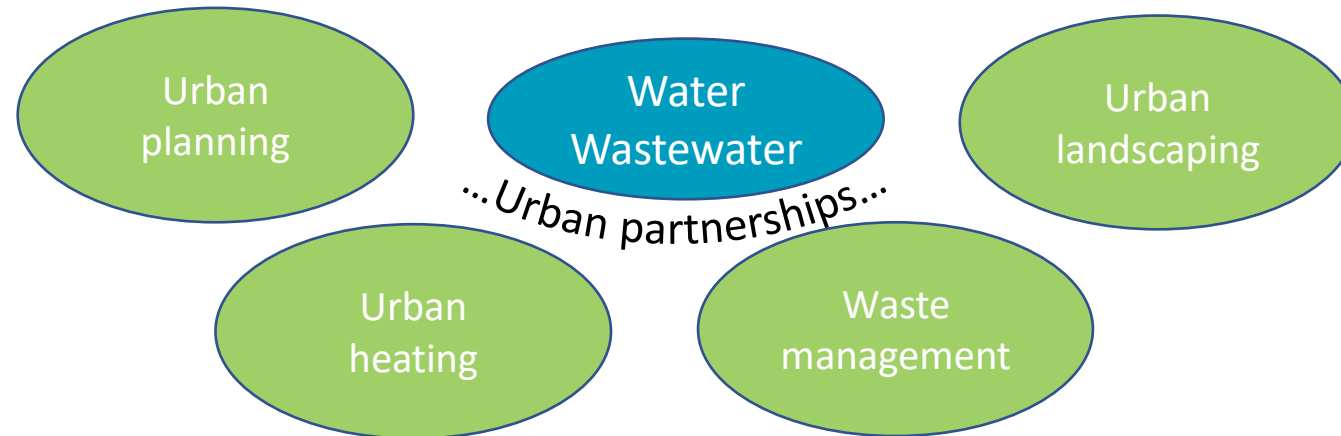
CC BY



Why reduce emissions from urban water?













The Water sector can also accelerate the global GHG reduction ...
...through its partnerships.











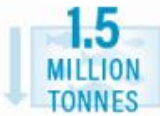
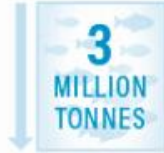




HALF A DEGREE OF WARMING MAKES A BIG DIFFERENCE:

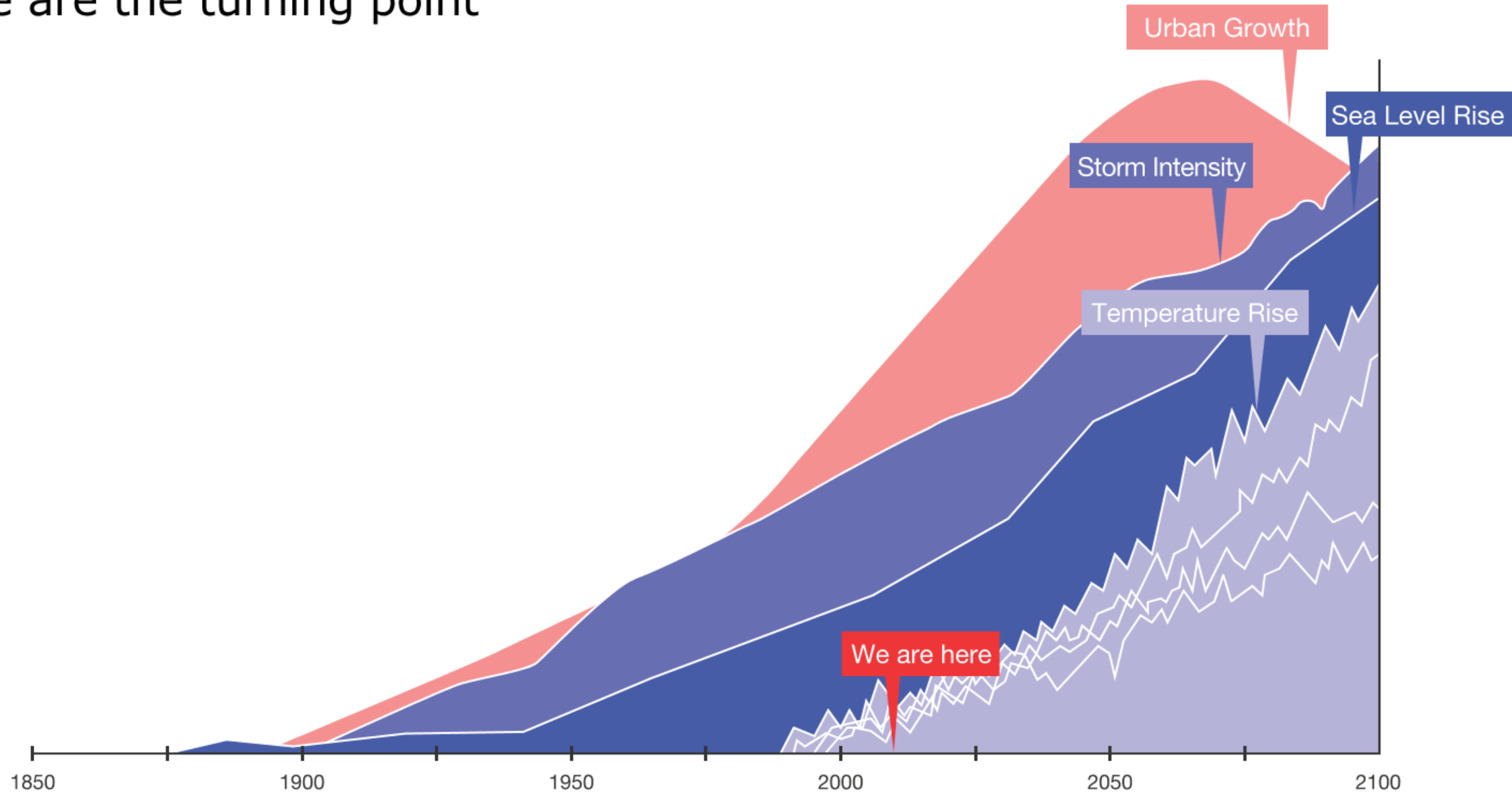
EXPLAINING IPCC'S 1.5°C SPECIAL REPORT

	1.5°C	2°C	2°C IMPACTS
EXTREME HEAT Global population exposed to severe heat at least once every five years	 14%	 37%	2.6x WORSE
SEA-ICE-FREE ARCTIC Number of ice-free summers	 AT LEAST 1 EVERY 100 YEARS	 AT LEAST 1 EVERY 10 YEARS	10x WORSE
SEA LEVEL RISE Amount of sea level rise by 2100	 0.40 METERS	 0.46 METERS	.06M MORE
SPECIES LOSS: VERTEBRATES Vertebrates that lose at least half of their range	 4%	 8%	2x WORSE
SPECIES LOSS: PLANTS Plants that lose at least half of their range	 8%	 16%	2x WORSE

	1.5°C	2°C	2°C IMPACTS
SPECIES LOSS: INSECTS Insects that lose at least half of their range	 6%	 18%	3x WORSE
ECOSYSTEMS Amount of Earth's land area where ecosystems will shift to a new biome	 7%	 13%	1.86x WORSE
PERMAFROST Amount of Arctic permafrost that will thaw	 4.8 MILLION KM ²	 6.6 MILLION KM ²	38% WORSE
CROP YIELDS Reduction in maize harvests in tropics	 3%	 7%	2.3x WORSE
CORAL REEFS Further decline in coral reefs	 70-90%	 99%	UP TO 29% WORSE
FISHERIES Decline in marine fisheries	 1.5 MILLION TONNES	 3 MILLION TONNES	2x WORSE

Credit:
Henk Ovink
presentation 2019

We are the turning point



Credit: Henk Ovink presentation 2019

We're at a crossroads



What will the future mix of assets look like?

Wastewater

Water supply

Conventional

Resource factory
approach leveraging NBS
where relevant

Reduce
Reuse water of different quality
for different purposes
Protect the catchment

Convey water from
further away, increase
treatment, desalinate



Vision and
knowledge within
the utility

Policy framework
that sets Mitigation
as a target

Funding
mechanisms that
are climate sensitive



Question to the audience

- Do you think the utility(ies) in the city you live in is (are) **technically** able and **empowered** to reduce its (their) carbon footprint?
 - Neither ready nor empowered
 - Empowered, but not ready
 - Ready, but not empowered
 - Ready and empowered
- Is sufficient action taken?

The IWA Principles for Water-Wise Cities ...for a Shared Vision



Three paradigm shifts:

- Limited resources
- City growth and densification
- Uncertain future

- Over 30 cities have endorsed the IWA Principles...



Beyond the endorsement: Assess your city against this vision,
using the Index developed by the [Cooperative Research Center for Water Sensitive Cities](#)



Let's take the right turn

Adaptation will happen as we start seeing changes, but can jeopardize mitigation if we “urgently” have to adapt.

Mitigation can only be the result of a collective effort and therefore needs to be a mandated task.

Call to action to

- **Utilities**

- develop knowledge & capacities on low carbon technologies and approaches

- **Cities and local governance**

- set the mandate to reduce emissions plan while planning the adaptation, as part of a holistic water-wise vision
- Assess their city to identify how it can progress towards Climate Smart Water... and being a Water-Wise City

- **International Institutions:**

- support utilities, cities and policy makers with clear technical guidelines



Thank You!

Corinne.trommsdorff@water-cities.org