The Alliance of Megacities for Water and Climate

MEGACITIES ALLIANCE
FOR WATER AND CLIMATE

UNESCO's perspective and the striking strategies developed in 16 Megacities of the world

Amsterdam, 3 November 2017

Bruno Nguyen
UNESCO – International Hydrological Programme

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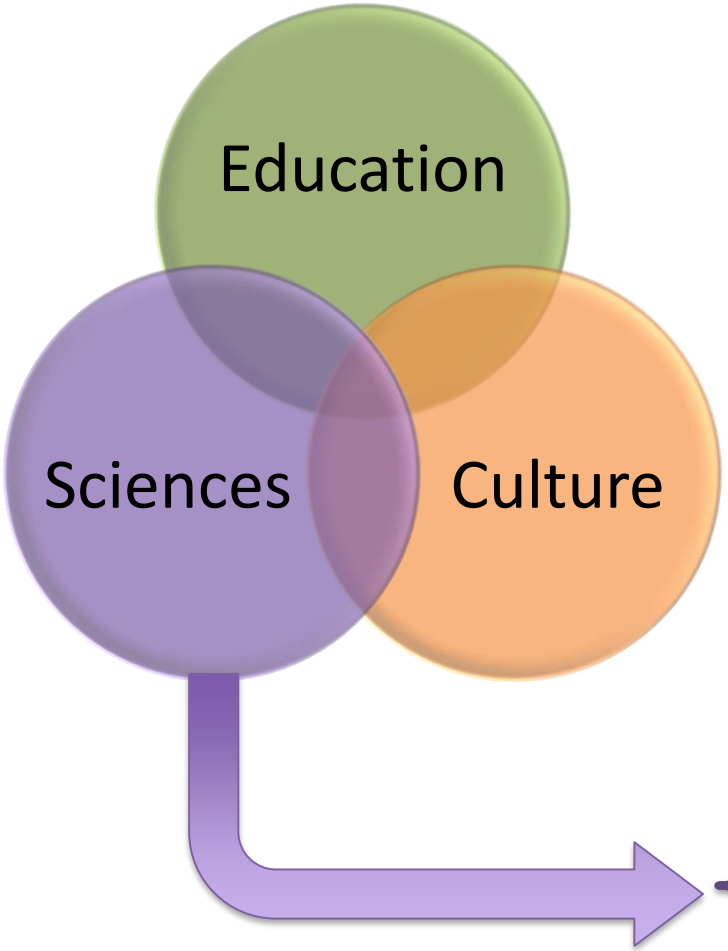
Introduction to UNESCO



Main priorities : Africa and Gender Equality

Other priorities

- Biodiversity Initiative
- Climate Change
- Education for Sustainable future
- Foresight and Anticipation
- Culture of Peace & Non-Violence
- Dialogue among Civilizations
- Crisis and Transition Responses
- Small Island Developing States
- HIV and AIDS
- ICT in Education
- Indigenous Peoples
- Science Education
- Youth
- Development

- Investing in Science Technology and Innovation
- Building Capacity In Science and Engineering
- Water Security
- Geology, Ecosystems and Biodiversity
- Ethics of Science and Technology
- Science for Society

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The UNESCO Water Family

UNESCO implements programs to develop the knowledge and capacity to manage freshwater resources

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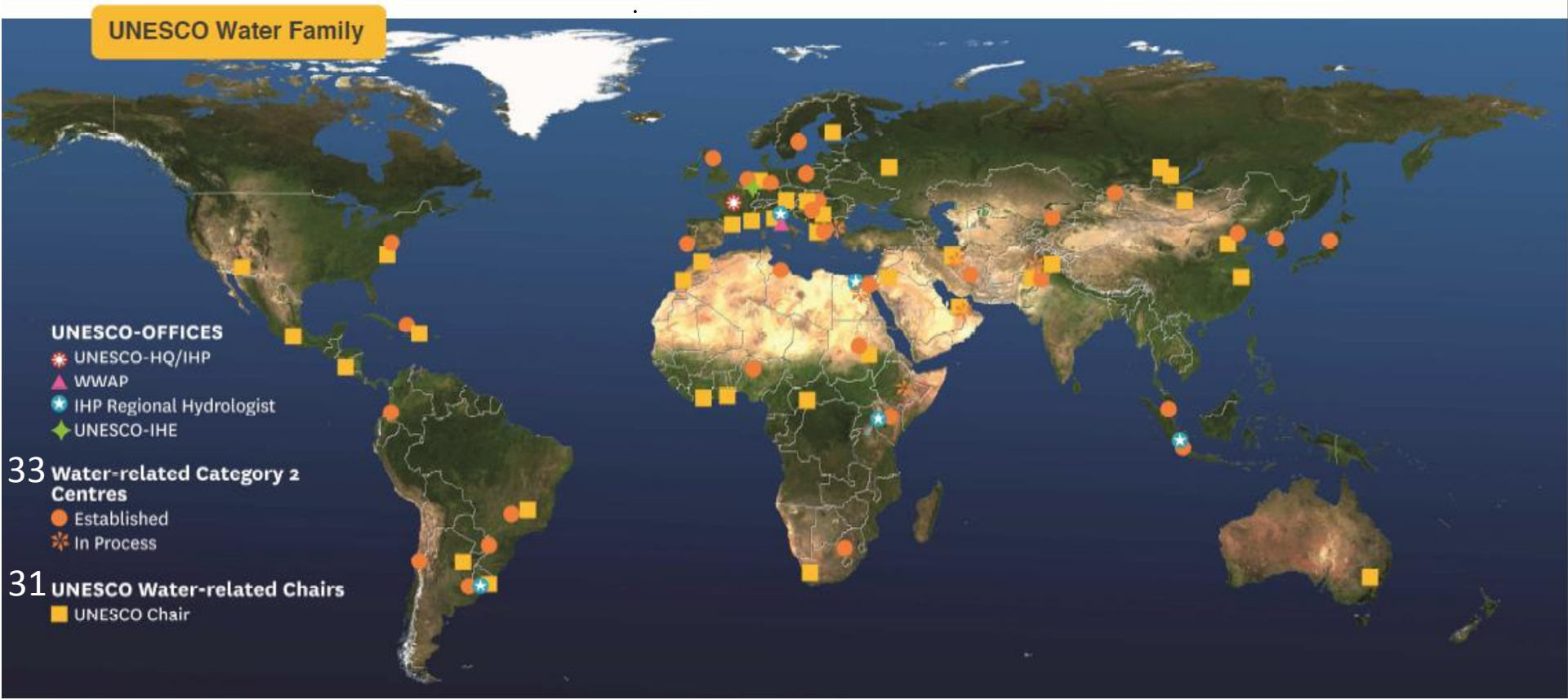
World Water
Assessment Programme



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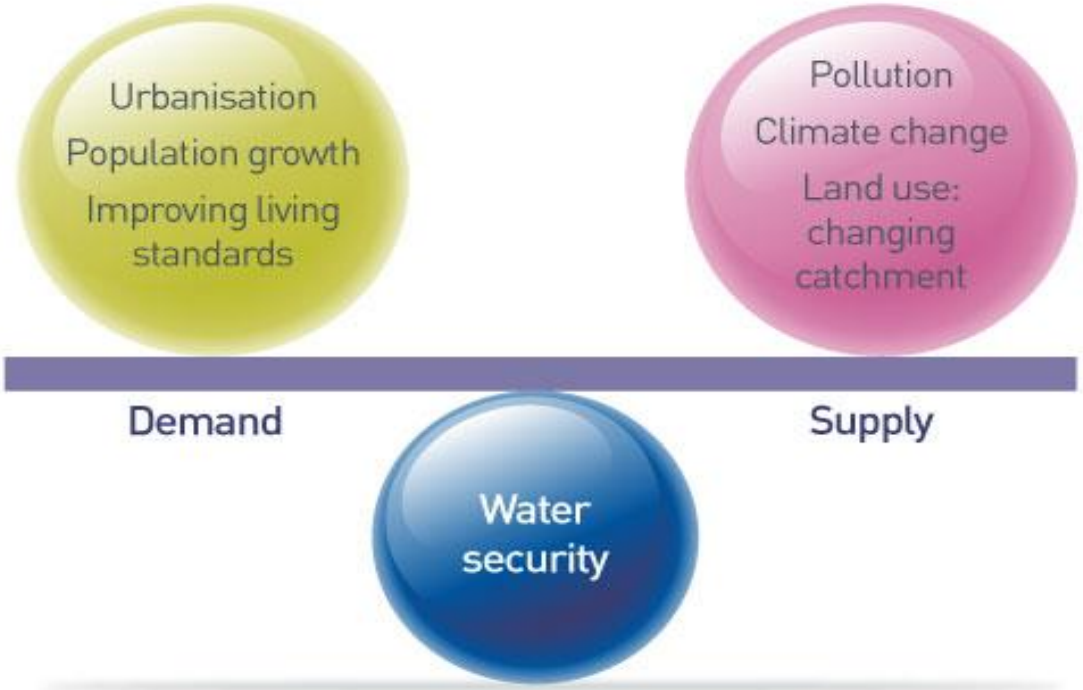
Definition of Water Security

A Balance between Resources and Usages



Water security = capacity of a population to safeguard access to adequate quantities of water of acceptable quality for sustaining human and ecosystem health on a watershed basis, and to ensure efficient protection of life and property against water related hazards (floods, landslides, land subsidence and droughts).

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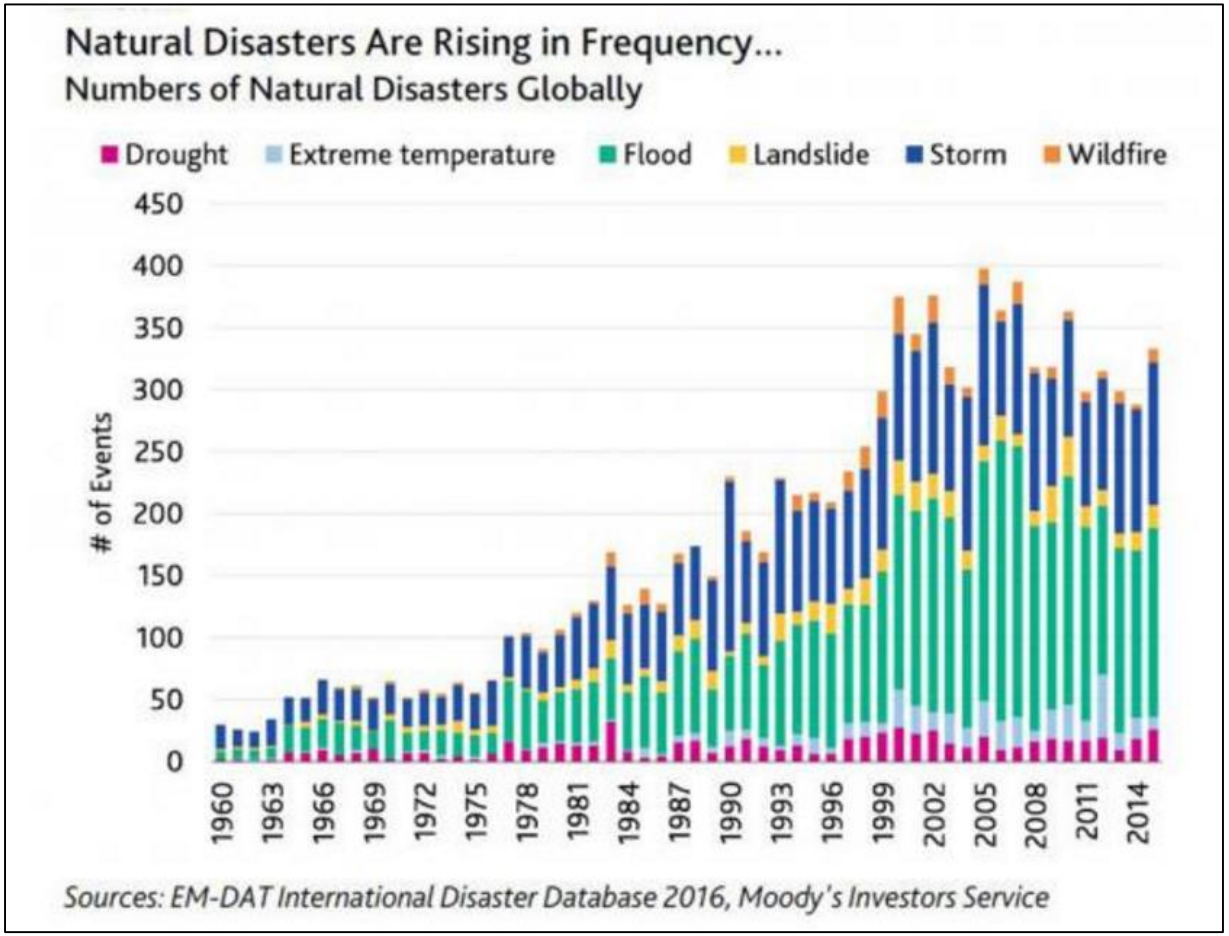
The Reality of Climate Change

There is a need to understand the importance of adaptation measures for the use of water to contribute to WATER SECURITY under the context of climate change.



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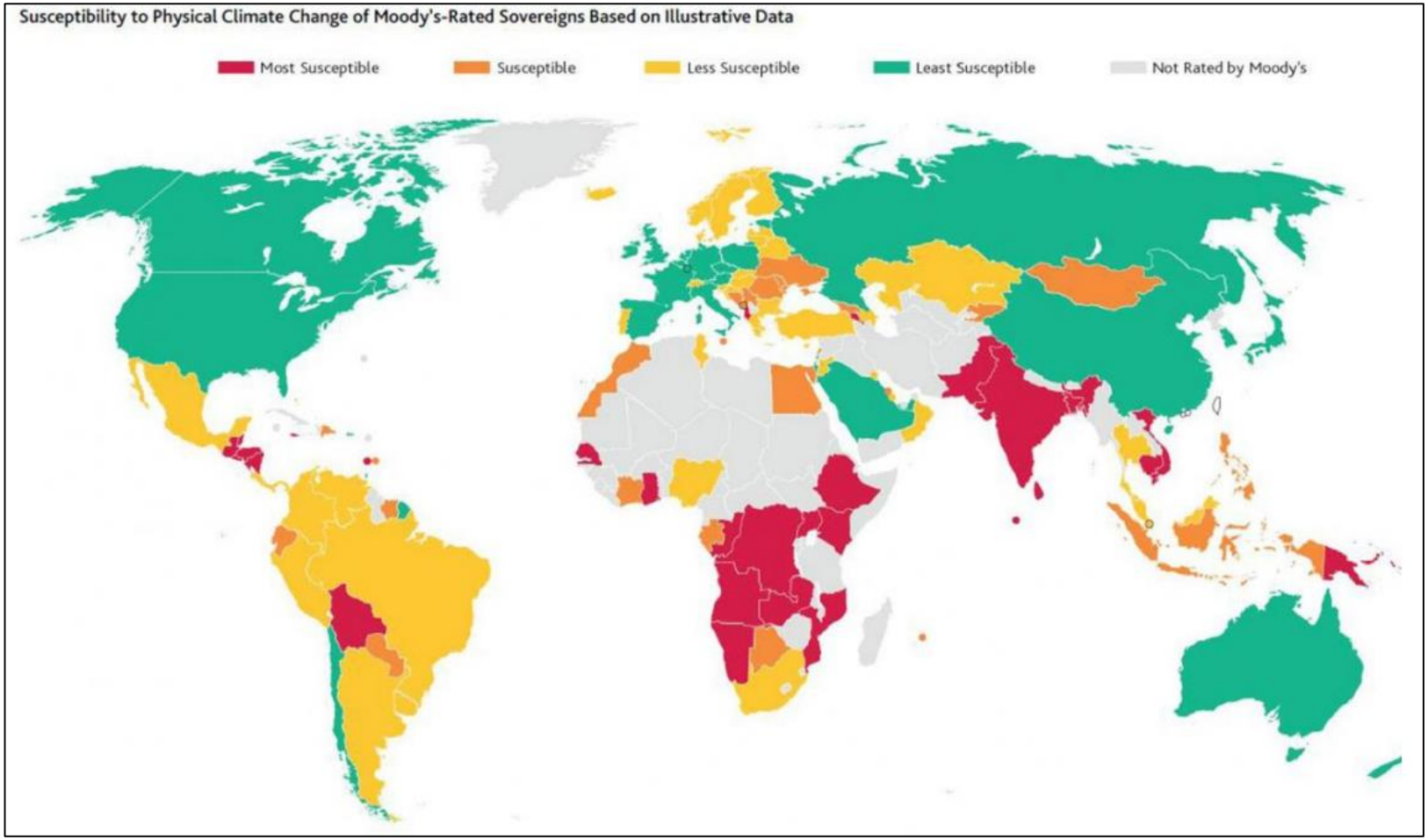
Consequences of Climate Change

This map shows the expected degradation of Countries' Sovereigns due to Climate Change: Poor countries are expected to pay high.



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Most common risks identified by water utilities, by geographical origin

	Europe	US	Japan	Israël
All	Biological/chemical /radiological, contamination Deliberate disturbance Severe weather hazards, Drought, Public health risks Flooding, Power failure	Biological/chemical, contamination, Deliberate disturbance, Public health risk	Biological contamination, Earthquake, Severe weather hazards, Public health risks	Biological/chemical /radiological contamination, Deliberate disturbance, Severe weather hazard, Public health risk, Flooding Earthquake, Power/technical/telecommunication failure
Specific	Earthquake, Fire , Technical /telecommunication failure High temperature	Radiological contamination, Severe weather hazard, Flooding, Drought, Earthquake, Power/technical/telecommunicatiion failure	Chemical/radiolog. contamination, Flooding, Deliberate disturbance, High temperature	

Source: Survey made by W-Smart/IWA in 2012

W-SMART Water Security Management Assessment, Research & Technology

IWA International Water Association — Specialist Group Water Security and Safety Management

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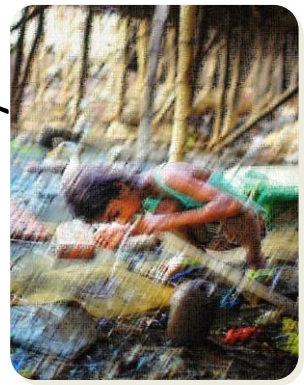
Expected Consequences of Climate Change

Too much

Too few

Too dirty



- For 1° C of global warming, approximately 7% of the global population will be exposed to a decrease of renewable water resources of at least 20%.
- Increase of unemployment across the global economy may amount to a reduction of 2% of jobs by 2020.
- Worldwide flood damage amounted to over US$50 billion in 2013 and is increasing.
- By 2050 between 150 and 200 million people could be displaced as a consequence of desertification, sea level rise and increased extreme weather events.
- Worldwide, the total cost of water insecurity to the global economy is estimated at US$500 billion annually. Including environmental impacts, this figure may rise to 1% of global GDP.

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Expected Consequences of Climate Change

- In a context of Population Growth with more Water needed for Agriculture and the Industry (Energy Production): + 50% fresh water needs by 2050.
- More frequent Natural Disasters and severe weather hazards: Floods, Droughts, Storms, Sea-Level Rise, Heat Island Effect...
- Increase of Water Scarcity, eventually seasonally.
- Increase of Fresh Water Pollution.
- More Competition for Fresh Water between Users.

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On the way to Climate Change Adaptation

- The real impact of Climate Change on Water will be huge:
  "Climate Change is Water Change"
- There is a need to raise more awareness on the necessary strategies to develop for adapting to Climate Change.
- Action is awaited at all levels: political, legal, industrial, technical, economical, operational, social, environmental, educational...
- Because the competition for water is already high in many places and will be even fiercer, more conflicts related to water are very likely to happen in the future: Hydro Diplomacy will expand.
- Dissemination of innovative solutions and best practices will help for the implementation of faster reaction.

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Developing Water Diplomacy

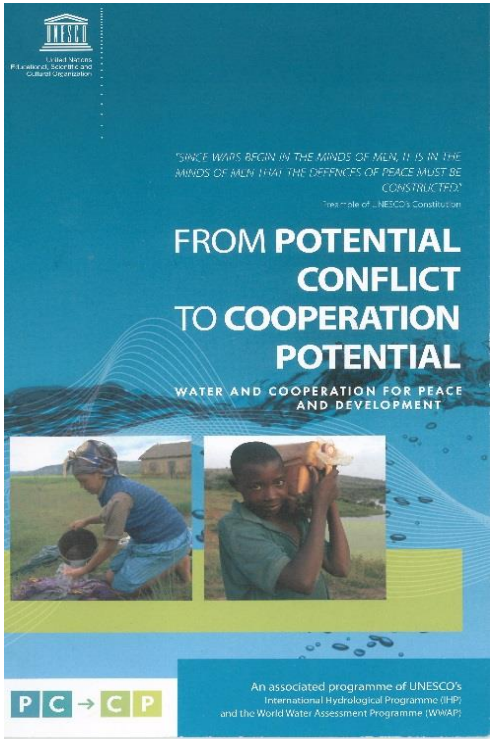
148 nations fall within international basins with 2 or more countries

21 countries lie entirely within international basins

276 transboundary rivers and lakes

592 transboundary aquifers involving 2 or more countries

Creates opportunities for inclusive, gender-sensitive discussions where women can shape the science policy agenda



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What are Megacities?

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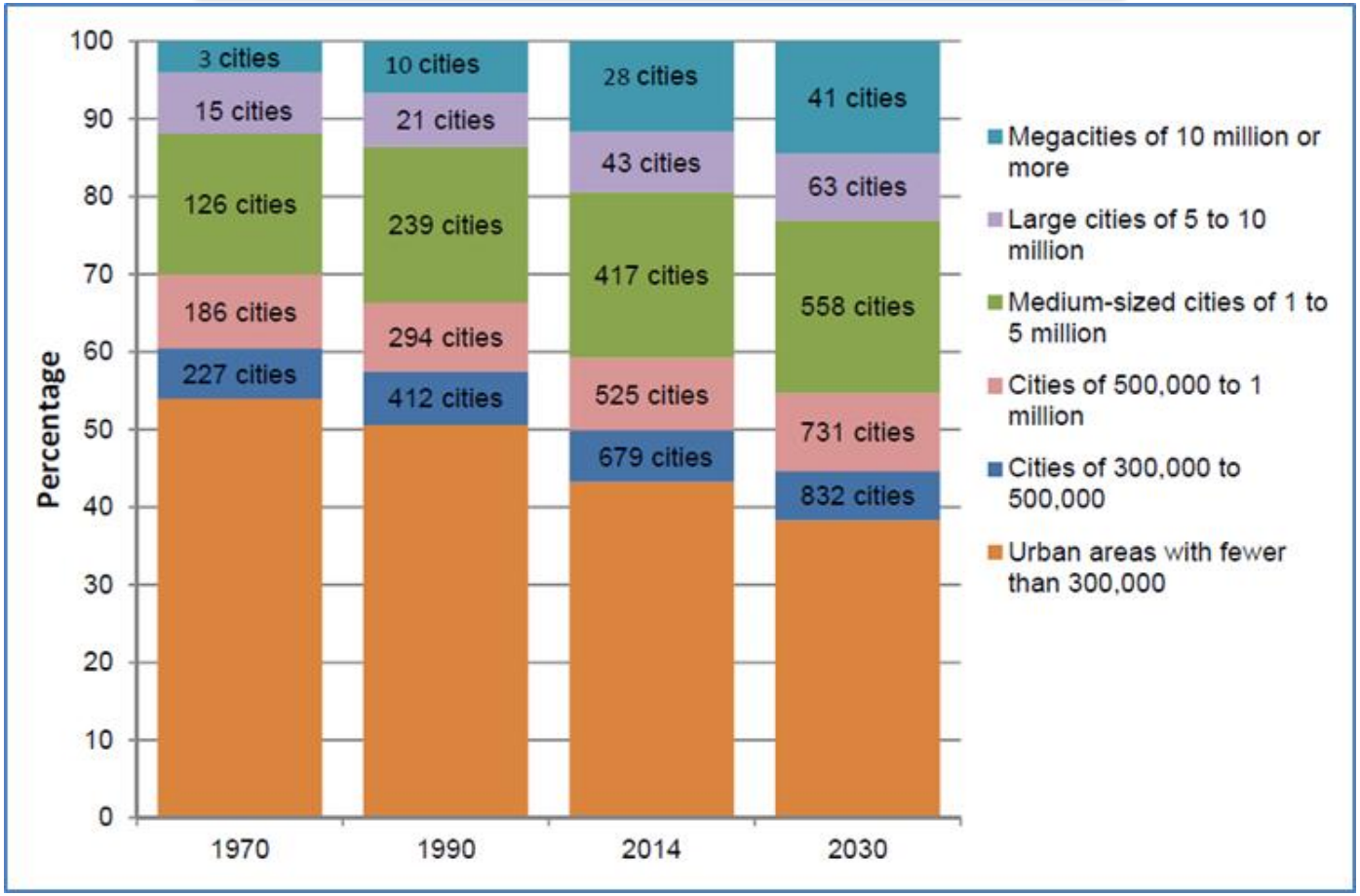
According to the UN definition, Megacities are cities with more than 10 million inhabitants. New York became the first megacity in the world in 1950, followed by Tokyo in 1960.

New megacities created between 2014 and 2030 will all be located in the least developed countries and regions.

The number of megacities increases

- 3 megacities in 1970
- 10 megacities in 1990
- 28 megacities in 2014
- 41 megacities in 2030



Source : World Urbanisation Prospects UN - 2014

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Megacities because of their size,..

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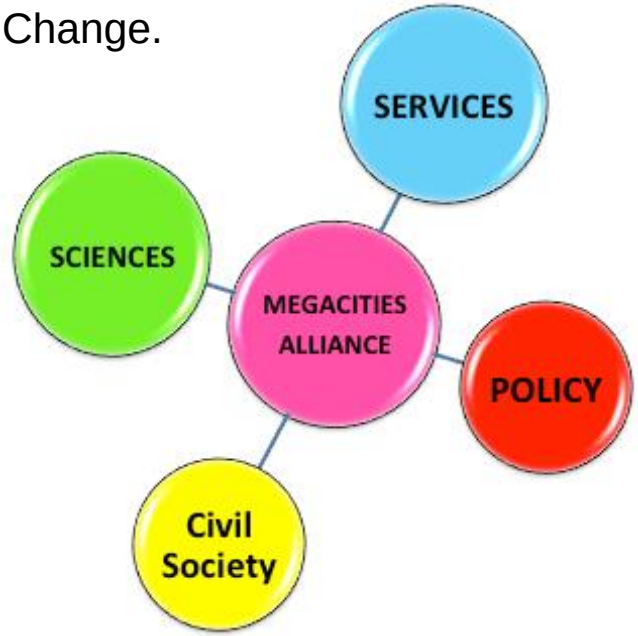
- Have a major impact on regional and/or national resources including water.
- Contribute to significant economic activity.
- Are responsible for massive environmental pollutions.
- Seldom have simple governance models.
- Concentrate many stakeholders: Decision makers, Utilities, Research Centers, NGOs.
- Maximize Social Inequities.
- And will bear the most adverse impacts of Climate Change.



"Cities are where the battle for sustainable development must be won. The new Sustainable Development Goals -- especially Goal 6 on universal access to water and sanitation services -- will only be achieved with the involvement of the world's largest cities."

Mrs. Irina Bokova,
Director-General of UNESCO

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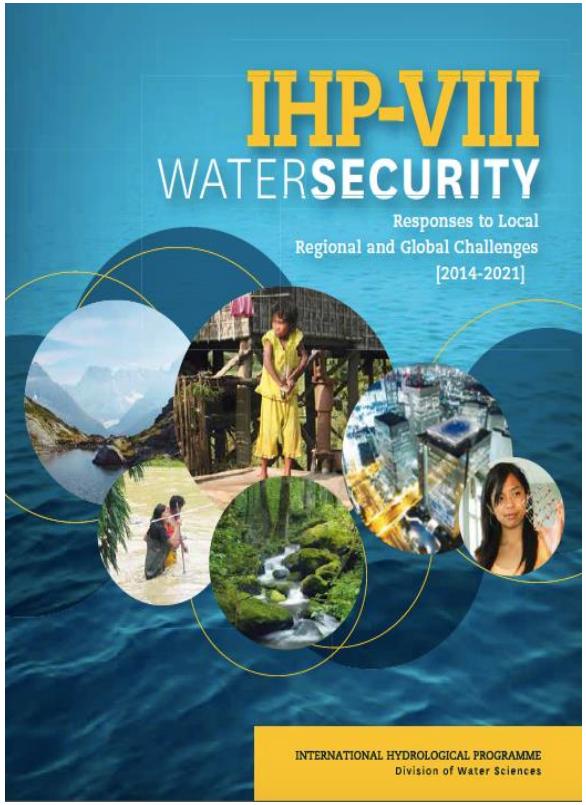
Water Challenges and Solutions in Big Cities



As part of the eight phase (2014-2021) of UNESCO's International Hydrological Programme on Water Security, an initiative was started for COP21 in Paris, December 2015 on "Water Megacities and Global Change"

Climate Change is expected to particularly and severely affect water services in urban centers

Risk Assessment for the Water situation and Challenges of:

BEIJING BUENOS AIRES
CHICAGO HO CHI MINH CITY
ISTANBUL KINSHASA LAGOS
LONDON LOS ANGELES MANILA
MEXICO MUMBAI NEW YORK
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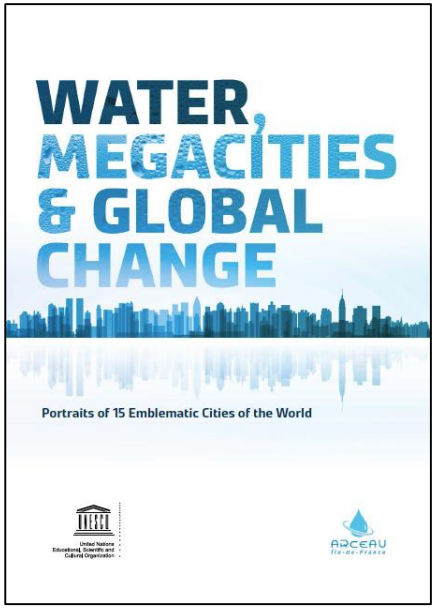

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Megacities Alliance for Water and Climate

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The Megacities Alliance was launched in Paris during COP21 on December 2015

The Megacities Alliance for Water and Climate is an initiative from UNESCO-IHP, SIAAP, ARCEAU-IdF and ICLEI

"Megacities in India with peripheral growth on their outskirts have reason to worry about implications of Climate Change since these can cause unpredictable high tides, floods and tsunamis. Mumbai will be happy to join the 'Megacities Alliance for Water and Climate' since it will be useful to exchange experience and expertise of various Megacities."

Mrs. Snehal S. Ambekar,
Former Mayor of Mumbai

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Objectives of the Alliance

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"If you want to go fast, then go alone
but if you want to go far, go together"
proverb

"Access to safe water and sanitation constitutes a major challenge for large global capitals. The development of an international exchange platform between large metropolises represents a genuine step forward, possibly improving the living conditions of billions of men and women." **Mrs. Anne Hidalgo, Mayor of Paris**

A platform for cooperation involving : operators, researchers, decision makers and civil society

Collect and disseminate information at a worldwide scale on strategies and operational plans developed by local authorities and their water operators, as well as results achieved by their implementation.

Facilitate experience sharing between the academic community and water operators in improving adaptation through best practices assessments.

Identify means and mechanisms for funding the adaptation of Megacities to the impacts of climate change on urban water.

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WSMART
Water Security Management Assessment, Research & Technology

A Regional approach is engaged since Megacities from a given region often share environmental, cultural, legal, climate, and institutional similarities.

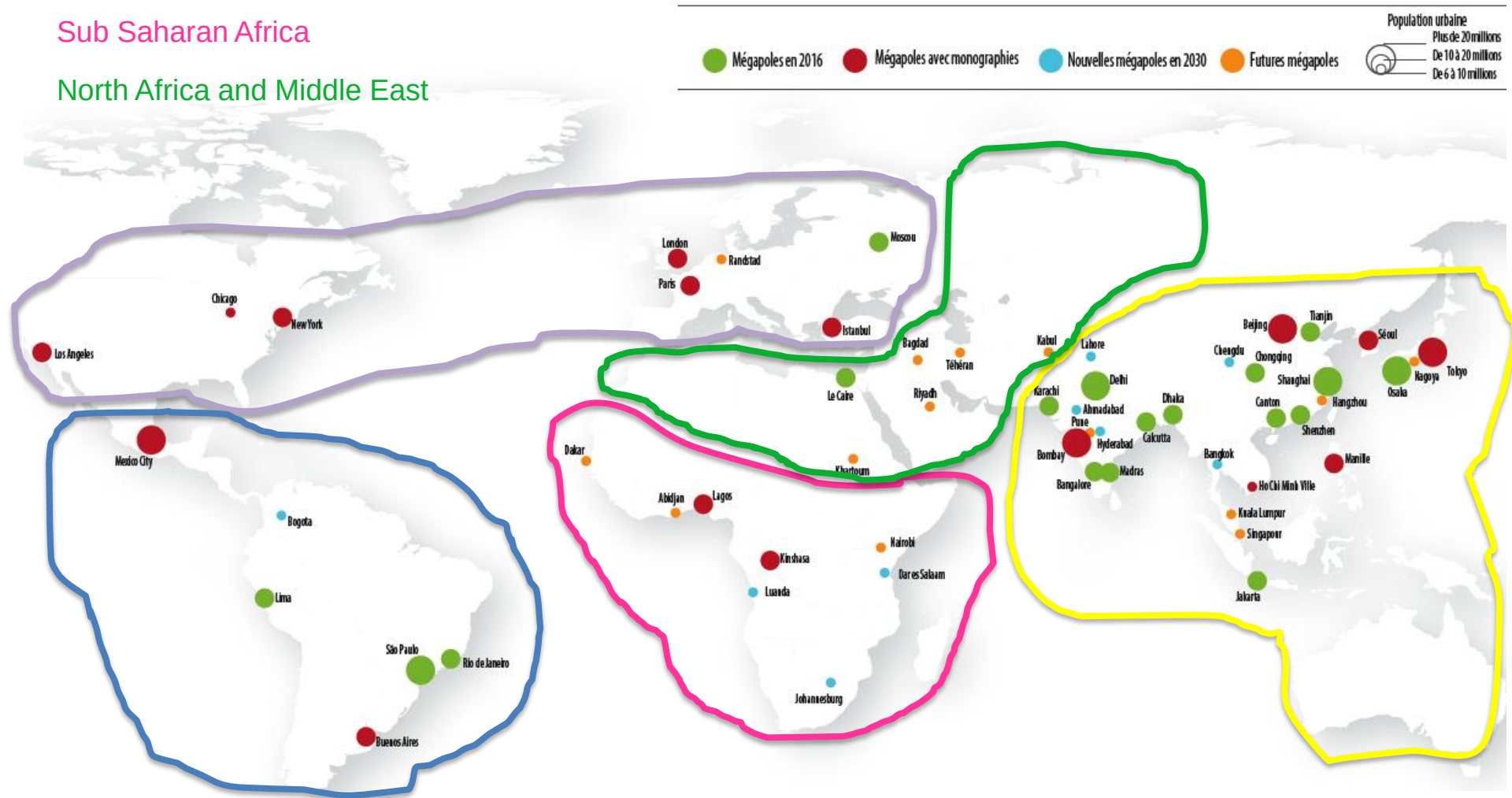
Europe and North-America

South and East Asia

Latin America

Sub Saharan Africa

North Africa and Middle East



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State of the Art in 16 Megacities

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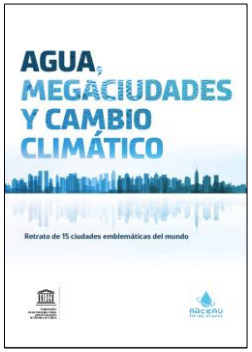

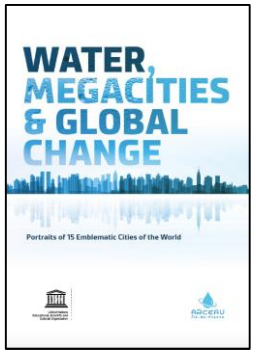

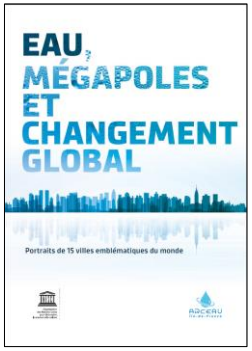

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- Tariff
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- Governance
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- Services
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- Demography

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Major Impacts of Climate Change on Water identified in Megacities

Water Security Management Assessment, Research & Technology

Not mentioning an effect does not mean that there is no effect, but that the consequences of this effect are estimated under control.

Megacity	Urban Flood	Sea Level Rise	Water Scarcity	Other impacts of Climate Change
Beijing	x		x	
Buenos Aires	x			Water table rise
Chicago	x			invasive aquatic species
Ho Chi Minh City	x	x		
Istanbul			x	
Kinshasa	x			soils erosion by rainfalls
Lagos	x	x		
London	x			
Los Angeles			x	
Manila	x		x	
Mexico City			x	
Mumbai	x	x		
New York	x	x		Storm surge
Paris			x	Low flow and surface water pollution
Seoul			x	
Tokyo			x	infrastructure destruction by natural disasters

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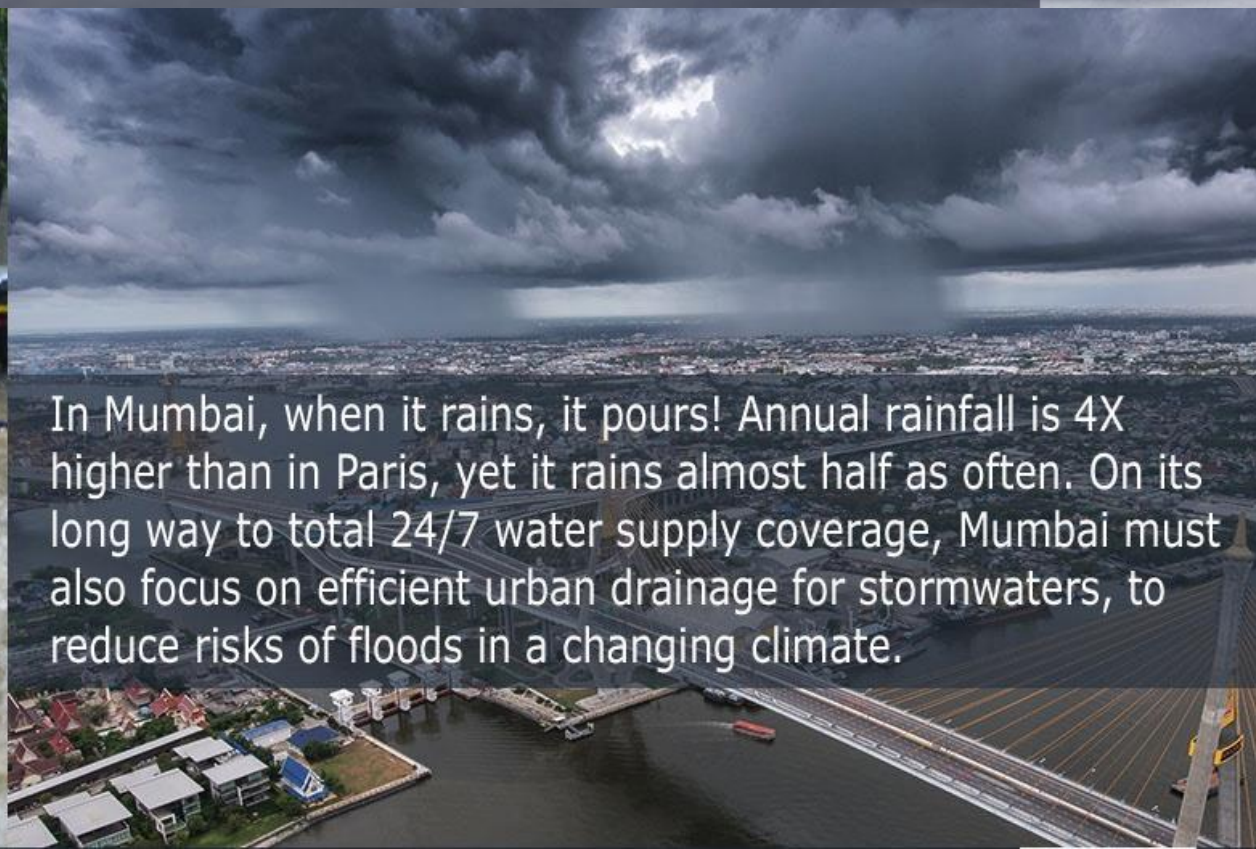
Water Security Management
Assessment, Research & Technology

Enhancing Urban Water Resilience by raising awareness and sharing case studies, experiences, best practices and innovative solutions for engaging the adaptation to new risks



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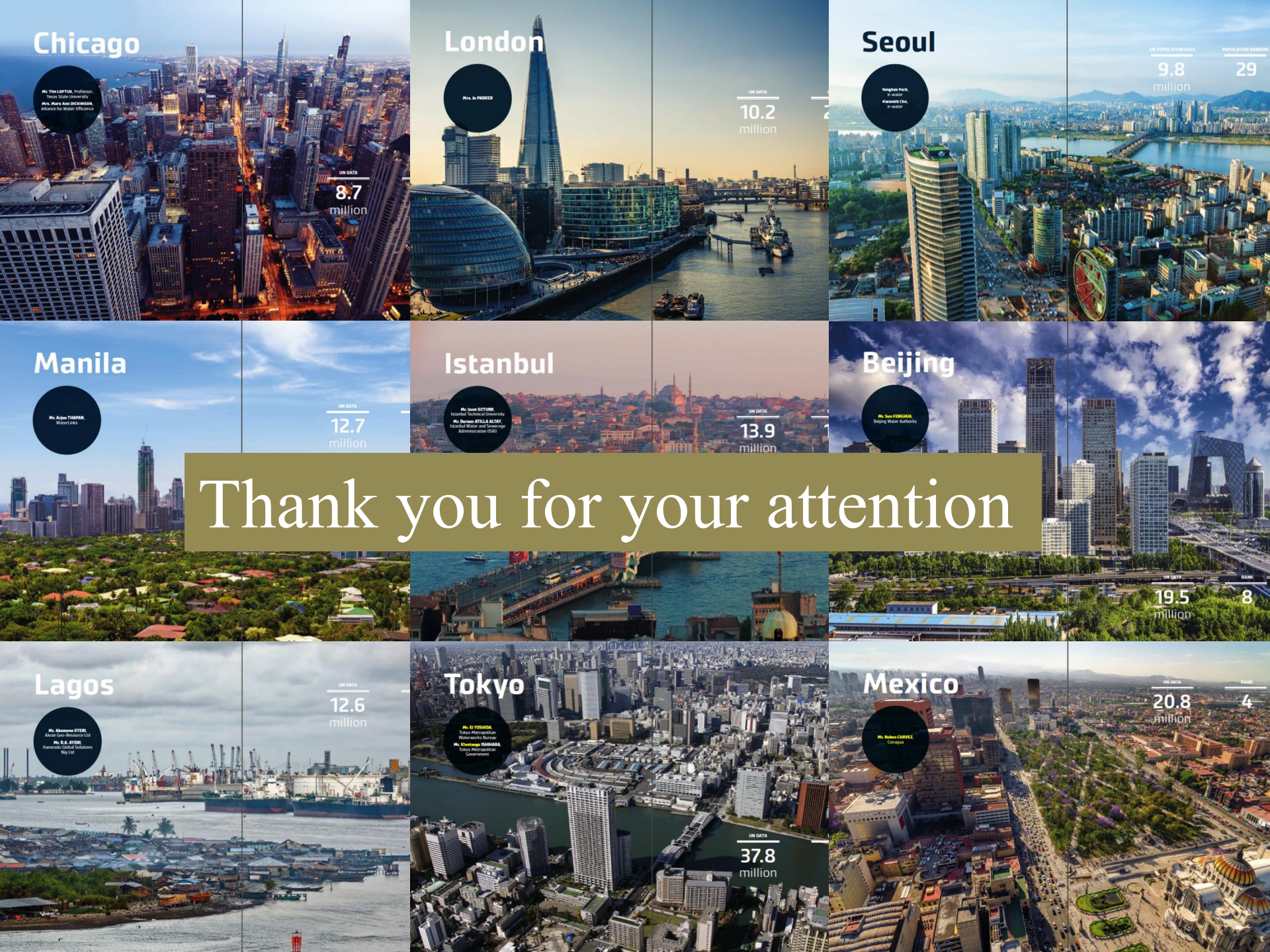
Conclusion and Next Steps

WSMART Water Security Management Assessment, Research & Technology

- A water and climate database for megacities of today and tomorrow is under construction. It will focus on using existing definitions and units developed by IWA for the water part.
- At governmental level, UNESCO-IHP has setup a working group involving experts nominated by member states: their work will be to define and promote interactions between UN organizations and the Megacities' Alliance for Water and Climate, to explore financing, and to help recruit Megacities for joining the network.
- Participation in international events, and organization of regional workshops for promoting the Alliance and initiating concrete common actions.
- Preparation of the next EAUMEGA conference in Paris, in spring 2019, for the official validation by Megacities of the ToR of the Alliance.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