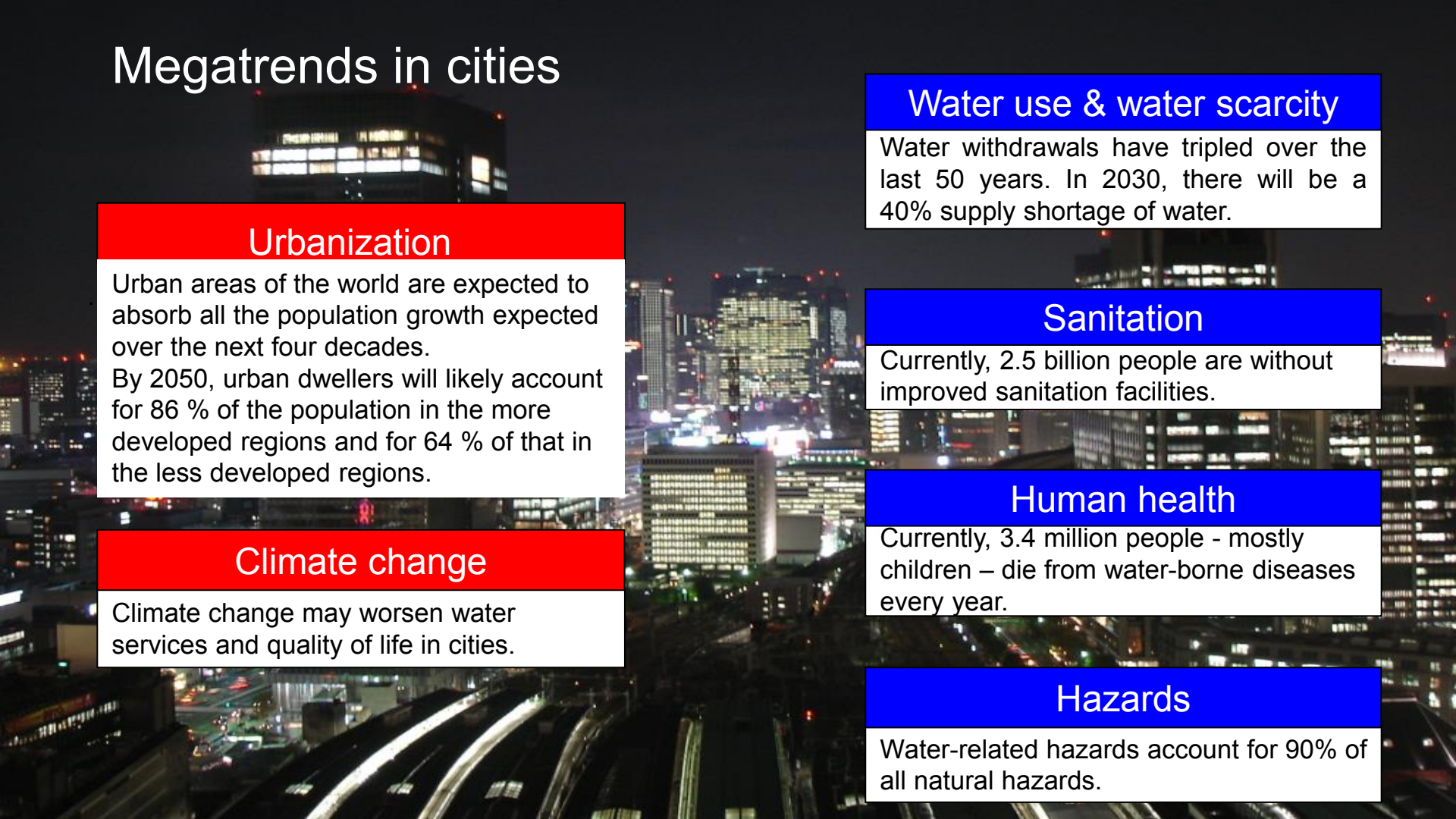


City Blueprints and Porto in Perspective

Kees van Leeuwen (KWR Watercycle Research Institute)
Frederico Fernandes (Águas do Porto)



Megatrends in cities



Urbanization

Urban areas of the world are expected to absorb all the population growth expected over the next four decades.

By 2050, urban dwellers will likely account for 86 % of the population in the more developed regions and for 64 % of that in the less developed regions.

Climate change

Climate change may worsen water services and quality of life in cities.

Water use & water scarcity

Water withdrawals have tripled over the last 50 years. In 2030, there will be a 40% supply shortage of water.

Sanitation

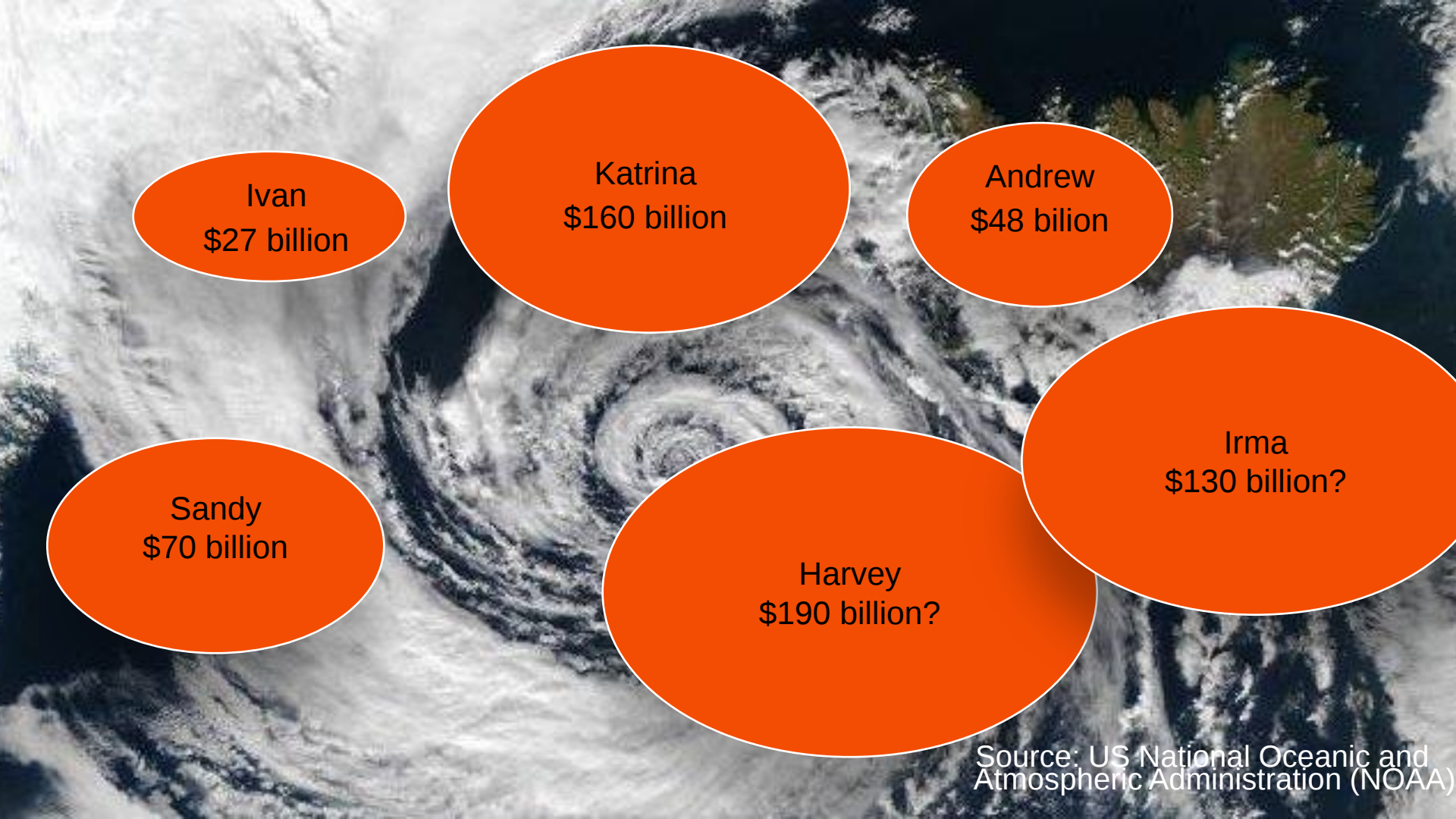
Currently, 2.5 billion people are without improved sanitation facilities.

Human health

Currently, 3.4 million people - mostly children – die from water-borne diseases every year.

Hazards

Water-related hazards account for 90% of all natural hazards.



Ivan
\$27 billion

Katrina
\$160 billion

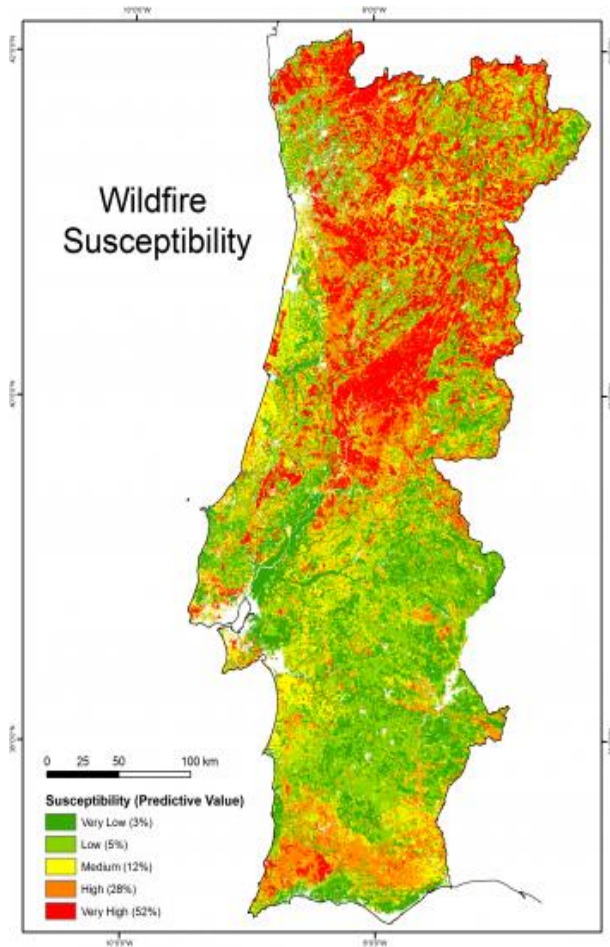
Andrew
\$48 billion

Sandy
\$70 billion

Harvey
\$190 billion?

Irma
\$130 billion?

Source: US National Oceanic and
Atmospheric Administration (NOAA)

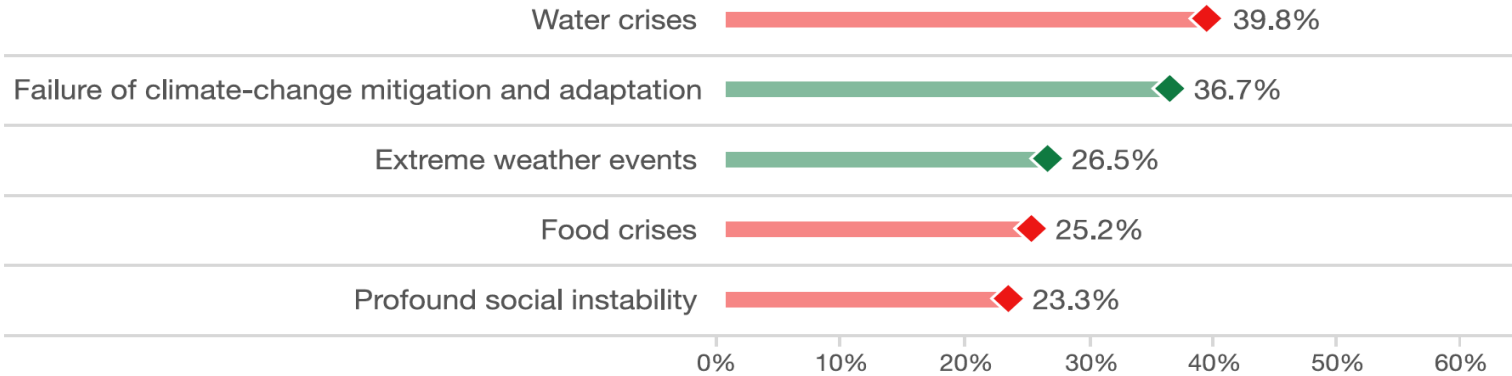


Wildfire susceptibility for mainland Portugal, adapted from Verde and Zêzere, 2010

Potential damage from climate hazards to critical infrastructures in the energy, transport, industrial and social sector could triple by the 2020s, multiply six-fold by mid-century, and surpass 10 times today's total of 3.4 billion €/year by the end of the 21st century, according to a new JRC study.

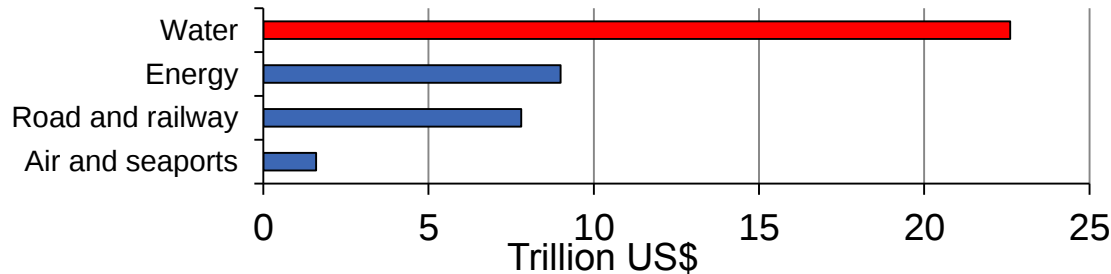


For the next 10 years

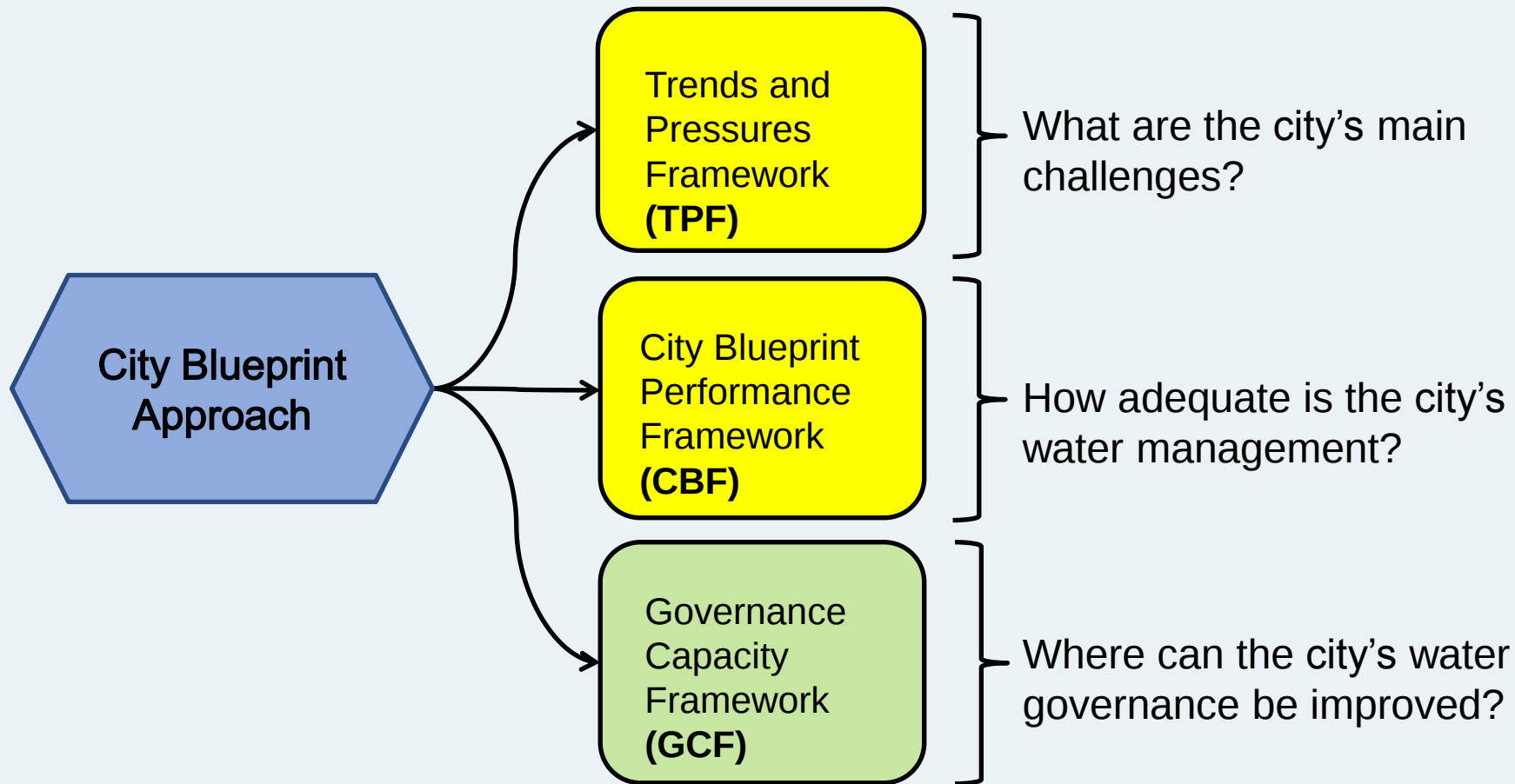


World Economic Forum 2015

41 trillion (10¹²) US\$ infrastructure expense up to 2025



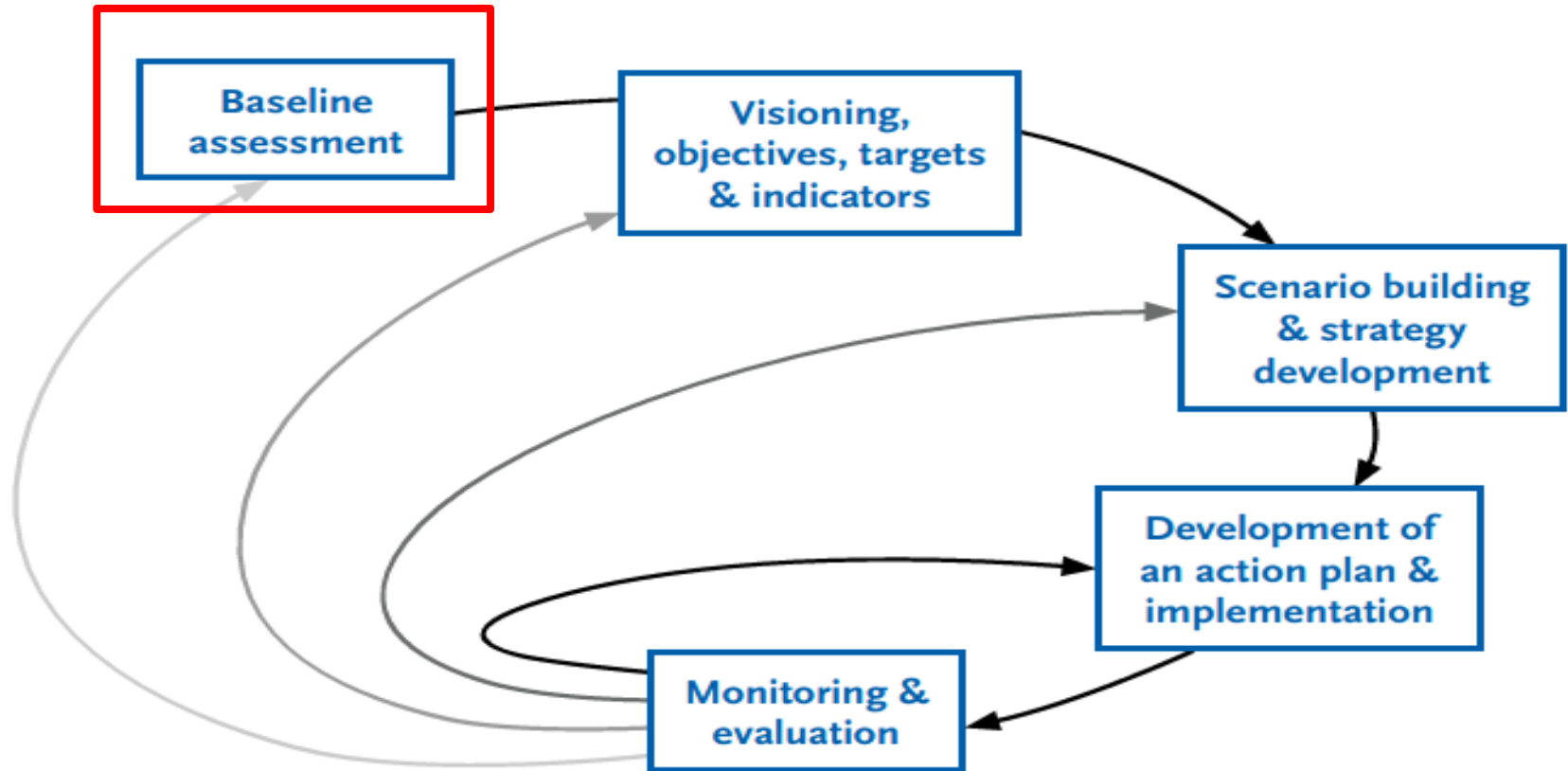
UNEP 2013



Why City Blueprint Framework Indicators?

The indicators are introduced in order to:

1. **evaluate current state** of the sustainability in the cities;
2. **identify best practices** and share them with other municipalities;
3. find direct links and **explore co-benefits (win-win's)** for all aspects of a smart city: water, waste water, solid waste, energy, transport, ICT, housing, biodiversity and climate adaptation;
4. **inform decision makers** and politicians about the current situation in the city;
5. **facilitate public engagement** for long-term plans and their implementation.

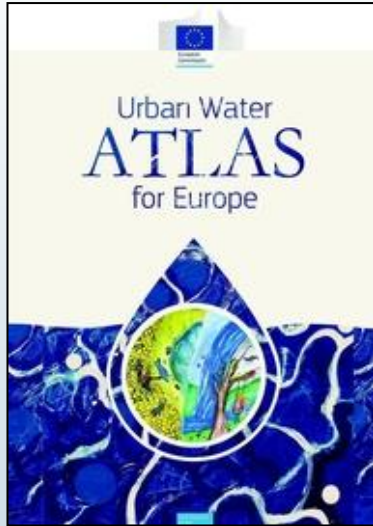


City Blueprint performance Framework

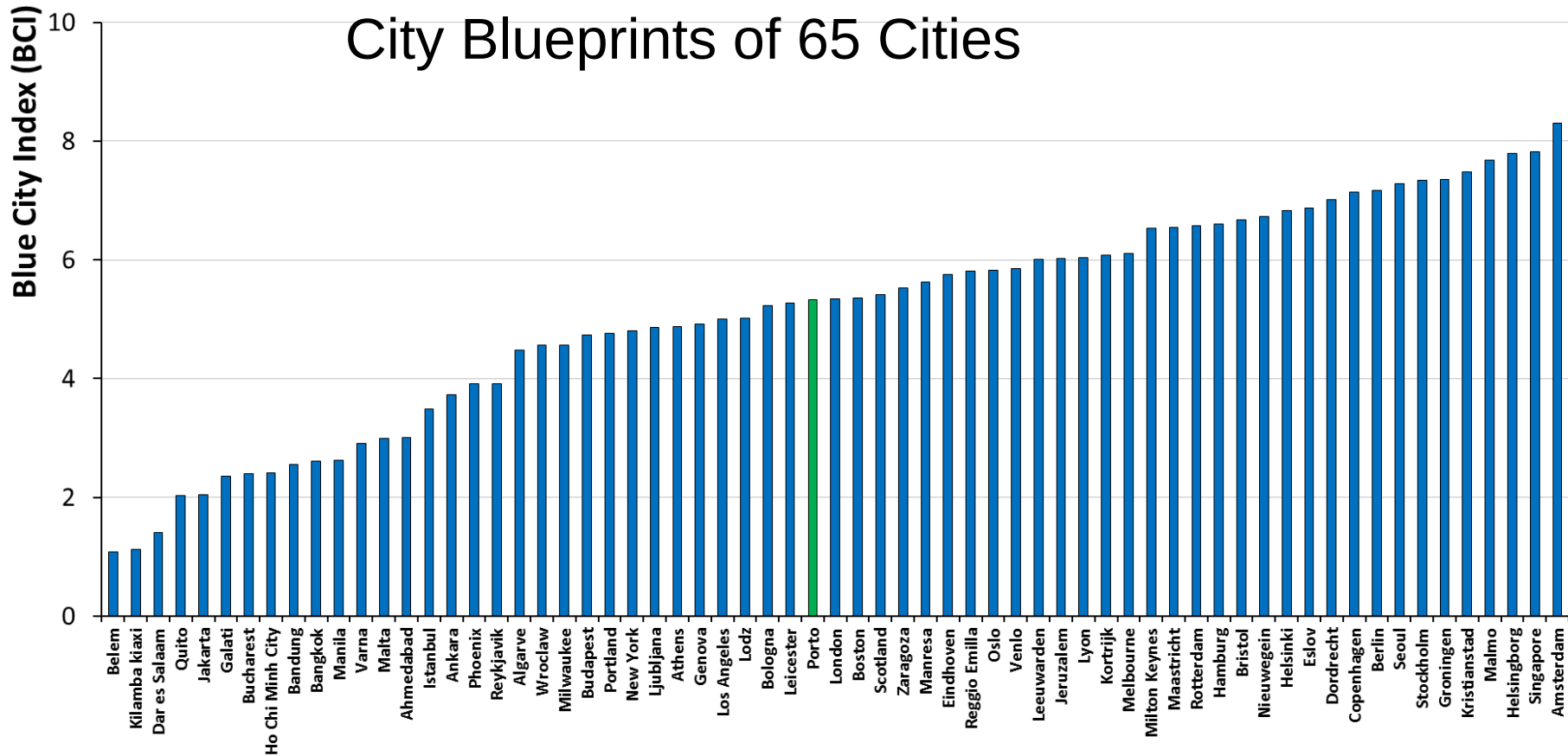
Goal	Baseline assessment of the sustainability of Urban Water Resources Management
Indicators	Twenty-five indicators divided over seven categories: 1. Water quality 2. Solid waste treatment 3. Basic water services 4. Wastewater treatment 5. Infrastructure 6. Climate robustness 7. Governance
Data	Public data or data provided by the (waste) water utilities and cities based on a questionnaire
Scores	0 (concern) to 10 (no concern)
BCI	Blue City Index, the geometric mean of 25 indicators which varies from 0 to 10
Stakeholders	Water utility, water board, city council, companies, NGOs, etc.
Process	Interactive with all stakeholders involved early on in the process

The Urban Water Atlas for Europe

Awareness for water!

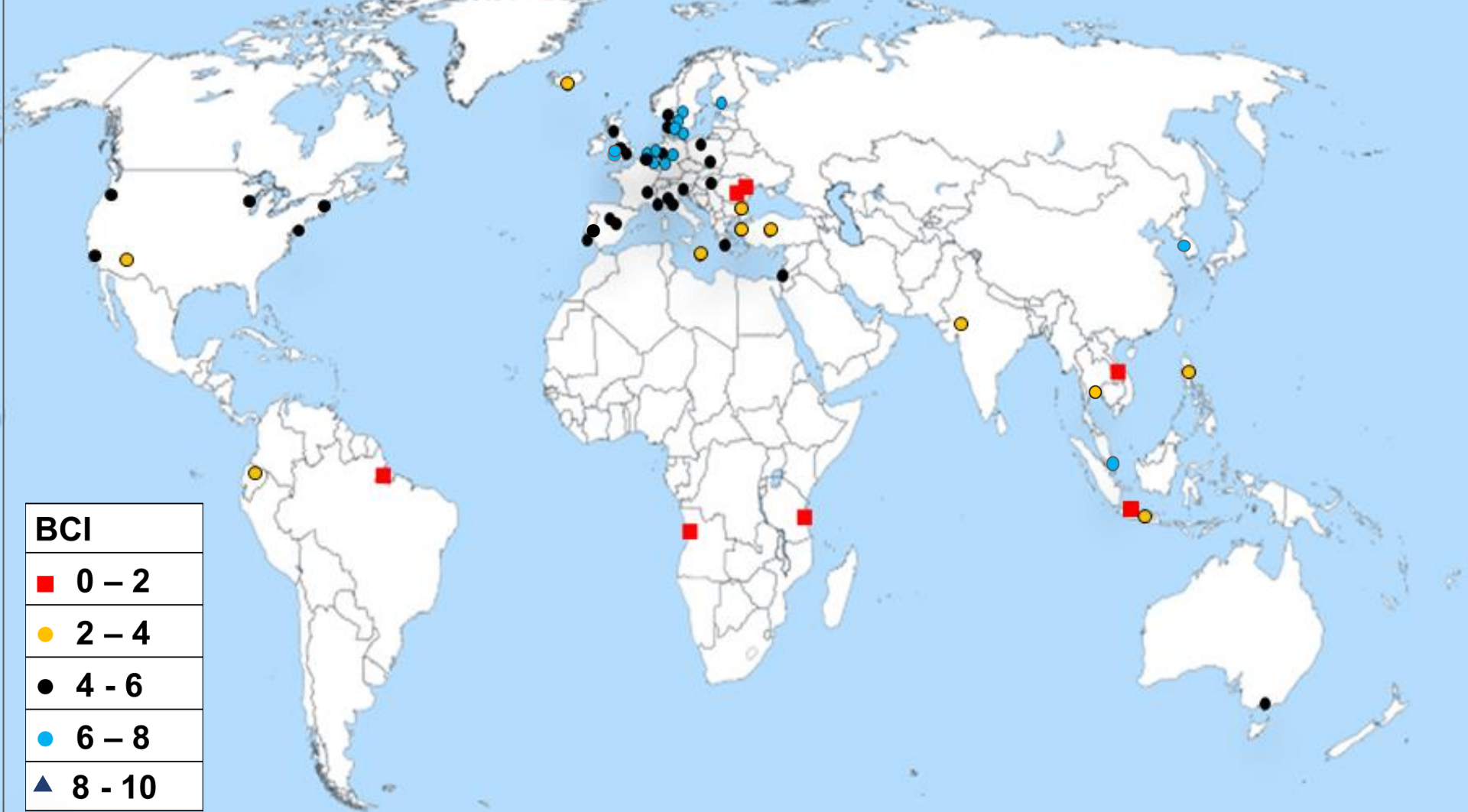


City Blueprints of 65 Cities



Categorization of cities

BCI	
■ 0 – 2	Cities lacking basic water services
● 2 – 4	Wasteful cities
● 4 - 6	Water efficient cities
● 6 – 8	Resource efficient and adaptive cities
▲ 8 - 10	Water wise cities



Trends and Pressures concerns of Porto

- Heat risk
- Economic Pressure
- Unemployment rate
- Salinization
- Urban drainage flooding

NB Green space in inner city is 18.6 %

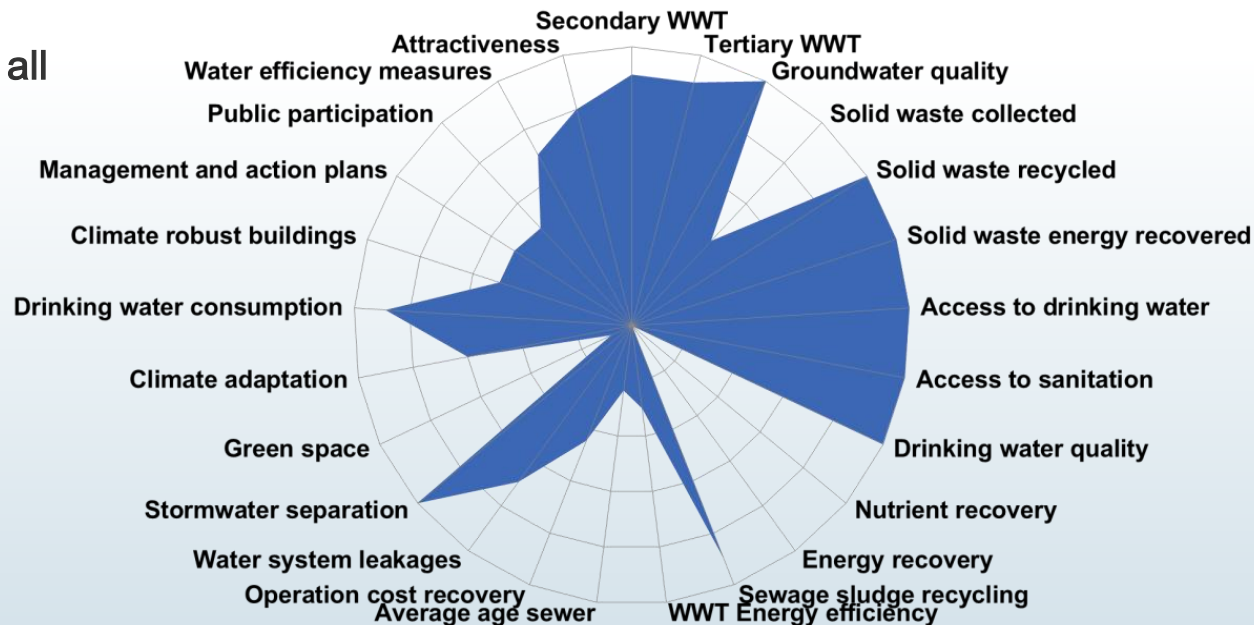


Porto (BCI 5.3): Performance and Next Steps

Porto performs well for almost all water management indicators.

The city can improve on:

- *Reducing solid-waste **
- *Nutrient recovery*
- *Energy recovery*
- *WWT Energy efficiency*
- *Average age of the sewer*
- *Green space*
- *Operation cost recovery*



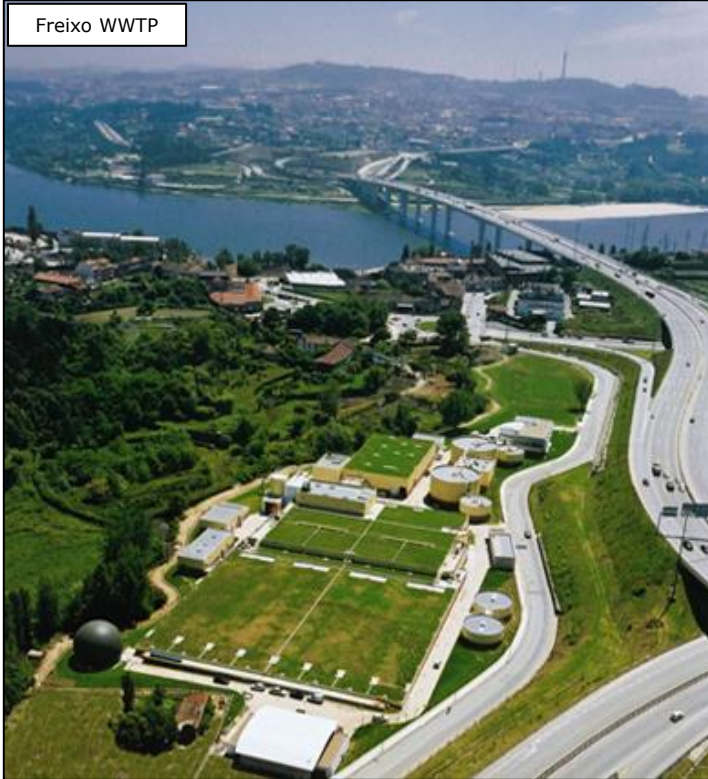
NB. Water consumption and waste production includes non-resident population of 500.000 (tourists)

Porto.

Águas do Porto Energy Efficiency Plan

work in progress

Freixo WWTP



Sobreiras WWTP



Águas do Porto offices



Consultancy provided by
INEGI to improve the
energy efficiency of
Porto's WWTP's
(and the offices of
Águas do Porto)



Porto.

Porto Green Roofs

Ongoing project to promote the use of green roofs in the city.

Lisboa Square



ANCVGREENROOFS.PT

ASSOCIAÇÃO NACIONAL DE COBERTURAS VERDES

PQAP 5th Façade Project



Campanhã Multimodal Terminal

Trindade Metro Station



Fonte: Câmara Municipal do Porto/arquiteto Nuno Brandão Costa

Conclusion: Cities provide local solutions for our global challenges

1. Cities are the major problem holders
2. Active civil societies incl. the private sector with visionary local government (*focus on children and grandchildren*) can cope with water challenges
3. It requires a baseline assessment (*where are we?*), a long-term strategy (*where do we want to go?*), a bottom-up approach and collaboration among cities and regions by sharing best practices (*sharing is caring*)
4. Cost of Inaction is high and time window for action is narrow and rapidly closing

Acknowledgements

1. **Marisa Fernandes, Paula Malheiro, Rita Cunha (Águas do Porto)**
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2. **Richard Elelman (Netwerch2o)**
3. **EIP Water Secretariat**



Improving Implementation Capacities of Cities and Regions by sharing best practices on Urban Water Cycle Services

FURTHER INFORMATION on the following websites:

1. City Blueprint website of EIP Water: http://www.eip-water.eu/City_Blueprints
2. City Blueprint website of Watershare®: <http://www.watershare.eu/>
3. Netwerch2o: <http://www.netwerch2o.eu/>
4. BlueSCities: <http://www.bluescities.eu/>
5. Power: <http://www.power-h2020.eu/>
6. OECD: <http://www.oecd.org/env/watergovernanceprogramme.htm>
7. Wetskills: <http://wetskills.com/>